

AGENDA

Board of Wildlife Resources
Wildlife and Boat Committee
7870 Villa Park Drive
Henrico, Virginia 23228

January 21, 2026
10:00 am

Committee Members: Mr. Jon Cooper, Chair, Mr. James Edmunds, Vice Chair, Ms. Laura Walters, Mr. Lynwood Broaddus (Alternate), Mr. Will Wampler (Alternate)

DWR Staff Liaisons: Mr. Michael Lipford, Dr. Mike Bednarski, Ms. Stacey Brown, and Ms. Amy Martin

1. Call to Order and Welcome
Mr. Cooper
2. Approval of the October 22, 2025, Committee Meeting Minutes **Final Action**
Mr. Cooper
3. Public Comment – Non - Agenda Item
Mr. Cooper
4. Migratory Bird Regulations & Bag Limit Proposals **Action**
Mr. Ben Lewis
5. Smallmouth Bass Management Plan **Final Action**
Dr. Mike Bednarski
6. EPA Grant Update
Mr. David Norris
7. Annual Reports to USCG
Ms. Stacey Brown
8. Virginia's Second Breeding Bird Atlas: A Citizen Science Informed Conservation Tool
Ms. Amy Martin

9. Wildlife Division Report
Mr. Michael Lipford
10. Fish Division Update
Dr. Mike Bednarski
11. Boating Division Update
Ms. Stacey Brown
12. Non-game Program Update
Ms. Amy Martin
13. Director's Report
Mr. Ryan Brown
14. Chair's Report
Mr. Cooper
15. Next Meeting Date: Wednesday, March 18, 2026
Mr. Cooper
16. Additional Business/Comments
Mr. Cooper
17. Adjournment
Mr. Cooper

Draft Meeting Minutes
Wildlife and Boat Committee
Board of Wildlife Resources
7870 Villa Park Drive – Board Room
Henrico, VA 23228

October 22, 2025
9:00 am

Present: Mr. Jon Cooper, **Chair**, Mr. James Edmunds, **Vice Chair**, Ms. Laura Walters, Mr. Will Wampler (alternate), Mr. Lynwood Broaddus (alternate); **Board Members** in attendance: Ms. Marlee Dance, Mr. Parker Slaybaugh, Mr. George Terwilliger; **Executive Director:** Mr. Ryan Brown; **Deputy Directors:** Ms. Becky Gwynn and Mr. Darin Moore; **Director's Working Group:** Dr. Mike Bednarski, Ms. Stacey Brown, Mr. George Braxton, Mr. Michael Lipford, Ms. Shelby Crouch, Mr. Bob Smet, Mr. Paul Kugelman, Ms. Rebecca Lane (virtual)

The Committee Chair called the meeting to order at 9:00 am and welcomed everyone. The Chair noted for the record that a Quorum was present for today's meeting.

Approval of the August 20, 2025, Committee Meeting Minutes:

The Chair called for a motion to approve the August 20, 2025, Wildlife and Boat Committee minutes. Mr. Edmunds made a motion to approve the minutes of the August 20, 2025, committee meeting. Mr. Wampler seconded the motion. Ayes: Cooper, Edmunds, Walters, Wampler, Broaddus

Public Comment - Non-Agenda Item: The Chair called for Public Comment – Non-Agenda Items.

- Gary Kimberlin spoke regarding dog hunting
- Raymond Carter spoke regarding dog hunting

Turkey Regulation Proposal: Mr. Cooper called on Mr. Mr. Mike Dye for a presentation.

Mr. Dye gave a presentation on the Turkey Regulation Proposal.

After comments and questions, The Chair thanked Mr. Dye for his presentation of the Turkey Regulation Proposal.

The Chair called for a motion, Mr. Edmunds made a motion, I move that the Wildlife and Boat Committee recommend that the Board of Wildlife Resources adopt the amendment to the wild

turkey bag limit regulation as presented by staff. It was second by Mr. Wampler and Ms. Laura Walters. Ayes: Cooper, Edmunds, Wampler, Walters, Broaddus.

After the motion and vote, Mr. Dye provided some Turkey Program Next Steps.

Blue Catfish Regulation Proposal: Mr. Cooper called on Dr. Mike Bednarski for a presentation.

Dr. Bednarski presented the Blue Catfish Regulation Proposal.

After comments and questions, the Chair thanked Dr. Bednarski for his presentation on the Blue Catfish Regulation Proposal.

Speakers:

- Tom Dunlap spoke regarding the Blue Catfish Regulation Proposal
- Trey Thorp spoke regarding the Blue Catfish Regulation Proposal

The Chair called for a motion, Mr. Edmunds made a motion, Mr. Chair, I move that the Wildlife and Boat Committee of the Virginia Department of Wildlife Resources put forward staff's regulatory recommendations on Blue Catfish to the full Board for adoption. It was seconded by Mr. Cooper. Ayes: Cooper, Edmunds, Walters, Broaddus, Wampler

Regulatory Reform Proposals: Mr. Cooper called on Mr. Aaron Proctor for a presentation.

Mr. Proctor presented the proposed regulatory reform actions staff has outlined to accomplish an overall 25% in regulatory mandates per Governor Youngkin's Executive Order 19.

After comments and questions, the Chair thanked Mr. Proctor for his presentation.

The Chair called for a motion, Mr. Edmunds, made a motion, Mr. Chair, I move that the Wildlife and Boat Committee approve the staff regulatory recommendations to meet the Agency's goal of 25% regulatory reduction per Executive Order 19 for final adoption. Mr. Cooper seconded the motion, Ayes: Cooper, Edmunds, Walters, Broaddus, Wampler

Mange Management Plan & Response Protocol: The Chair called on Dr. John Tracey for a presentation.

Dr. Tracey presented the Mange Management Plan & Response Protocol.

After comments and questions, the Chair thanked Dr. Tracey for his presentation.

The Chair called for a motion. Mr. Cooper made a motion, I move that the Wildlife and Boat Committee recommend that the Board endorse the 2025-2029 Bear Mange Management Plan as

presented by staff. It was seconded by Mr. Edmunds. Ayes: Cooper, Edmunds, Walters, Broaddus, Wampler

After the motion and vote, Dr. Tracey presented some Research Project Updates, Spatially Explicit Capture-Recapture, and Capture and Movement Modeling information.

Virginia Sea Turtle & Marine Mammal Conservation Plan: The Chair called on Ms. Amy Martin for presentation.

Ms. Martin gave an update on the Virginia Sea Turtle & Marine Mammal Conservation Plan. After comments and questions, the Chair thanked Ms. Martin for her presentation.

VPA-HIP Program Accomplishments: The Chair called on Mr. Cale Godfrey for an Update. Mr. Godfrey gave an update on the VPA-HIP program Accomplishments.

After comments and questions, the Chair thanked Mr. Godfrey for his update.

Wildlife Division Report: The Chair called on Mr. Michael Lipford for a Wildlife Division Report.

Mr. Lipford reported:

Increased wildlife response capacity – Heath Brown began 9/25 as the new Human-Wildlife Conflict Specialist! (Heath is planning to attend meeting and can be recognized). He has worked for several years as a wildlife technician with DWR and has a depth of experience in this area. Heath has been training with the Wildlife Helpline and others. He will assist primarily with after-hours calls regarding severely injured/sick wildlife and other conflicts requiring a prompt response.

Reporting and response for severely affected mange bears – After hours, Heath or other DWR staff will monitor the Helpline mailbox and respond promptly to reports of severe mange. [NOTE: This is a slight change from earlier when we were planning to provide a number on that voicemail for the public to call; we think not having 2 numbers will reduce confusion.

Hunter sampling 2025-26 season – This season, kits will be provided to bear hunters in lieu of setting up physical sampling stations. DWR staff will be in touch with bear hunting organizations about this soon.

Forestry Prospectus - A Forestry Prospectus was recently developed to increase the pace and scale of forest management to benefit wildlife, produce agency revenues, and build capacity in the program to get to scale. Expecting to generate \$1M in revenue in FY25. Move to triple revenue and acreages from the average of \$400K/year in revenue on 450 acres. In FY 25, \$1.2M in revenue was budgeted and we expect to meet that goal. Retired Forester Kent Burtner leads this work along with Curtis Chandler.

2025 Safety & Operations Meeting – the 3rd annual meeting was hosted by Region 4 staff at Douthat State Park in mid-September. The goal of the meeting is to have peer-to-peer knowledge transfer on a variety of WMA operations needs and invited safety speakers to educate on specialized topics. Sessions included sprayer calibration for safe and cost-effective chemical application, downed powerline safety, Emergency Action Plans, small engine troubleshooting, habitat and forest management.

Wildlife Management Area Work Unit Action Plans – An Action Plan for each Work Unit was created. These 13 Action Plans include GIS maps of all habitat activity, an annual calendar of primary activities and a process to simplify activity reporting by staff. Action Plans will be updated annually to establish activities for the upcoming year to assist with workload management, budget development and habitat/infrastructure management. Habitat activities reported for FY25 were Forest management: 2286.0 acres; Invasives control: 136.3 acres; Wetland restoration: 562.7 acres; Prescribed fire: 1437.9 acres.

Highly Pathogenic Avian Influenza:

- Over the last several weeks, DWR has received an increased number of reports of sick/dead vultures, primarily black vultures.
- Clinical signs and testing results indicate it is highly pathogenic avian influenza (HPAI).
- Sporadic locations throughout the state are represented, but a highly visible outbreak in Smyth and Washington counties in SWVA generated several media inquiries.
- So far this fall, disease has not been reported in species other than vultures, but as migration ramps up other species could become involved.

Virginia Gray Fox Project: In coordination with Virginia Tech, the DWR Furbearer biologist set and collected 71 trail cameras for the Virginia Gray Fox Project across 13 counties in central Virginia from April-Sept 2025. These cameras were set on public and private lands ranging from rural to urban environments for at least 6 weeks, capturing all wildlife species that passed by the cameras. The data provided by these cameras will contribute to the project's goals of assessing the current gray fox population across Virginia, as well as determining factors influencing their occurrence.

After comments and questions, the Chair thanked Mr. Lipford for his report.

Fish Division Report: The Chair called on Dr. Mike Bednarski for a Fish Division Update.

Dr. Bednarski reported:

Fall fishing is ramping up in Virginia - from a stocking standpoint, that means we've completed our fall channel catfish stocking and are beginning our fall trout stockings. We will stock 50K catfish by the end of next week. These fish underpin a large part of our FishLocalVA initiative which provides quality fishing opportunities in developed areas across the state. With fall trout stocking, we are stocking waters across the state with catchable brook, brown, tiger and rainbow trout now through the spring. We will stock approximately 700K fish during the season and if you'd like to join us for a stocking run, get in touch with Aquatics.

After comments and questions, the Chair thanked Dr. Bednarski for his report.

Boating Division Update: The Chair called on Ms. Stacey Brown for a Boating Division Update.

Ms. Brown reported:

Ms. Brown mentioned how DWR celebrated the beginning of October with National Customer Service Week. We have 17 staff in our customer service section and their work consists of managing the processes around registering and titling motorboats as well as assisting customers with their purchase of hunting and fishing licenses. While many customers utilize our online services for these purchases, so far this year, our customer service section has processed over 54,000 transactions related to boat registration and titling, about 65% of their work, and almost 18,000 transactions related to hunting and fishing. Our staff also manages a call center – so far this year we have handled over 76,000 calls. Again, the majority of those calls are related to boat titling and registration, but about 20% of these calls are calls to our “information desk” for people to ask questions (and get answers) for anything related to wildlife, hunting, fishing, boating, and other similar topics! We also respond to emails sent to a customer service shared email box and a boat title and registration shared email box. These mailboxes have received over 5,000 emails this year to date. Our customer service staff does a tremendous job to make sure our constituents have all the information and licenses needed to hit the woods or the water!

Several staff members from the Boating Division attended the National Association of State Boating Law Administrator’s annual meeting and conference. Two staff members provided presentations during the conference. Staff came back armed with information regarding a variety of topics – such as how to write better boat incident reporting narratives, e-titling for vehicles, and how to identify illegally imported boats. Much of the information gained during this conference will be put into practice during the coming year.

She shared a few more numbers from the Boating Safety and Education Program. They have had over 20,000 students take a boating safety course. The number of boating incidents this year is in line with the number of incidents last year with 71 total incidents which includes 10 fatalities, 44 injuries, and 30 incidents that had damage over \$2,000 or a total loss of the vessel.

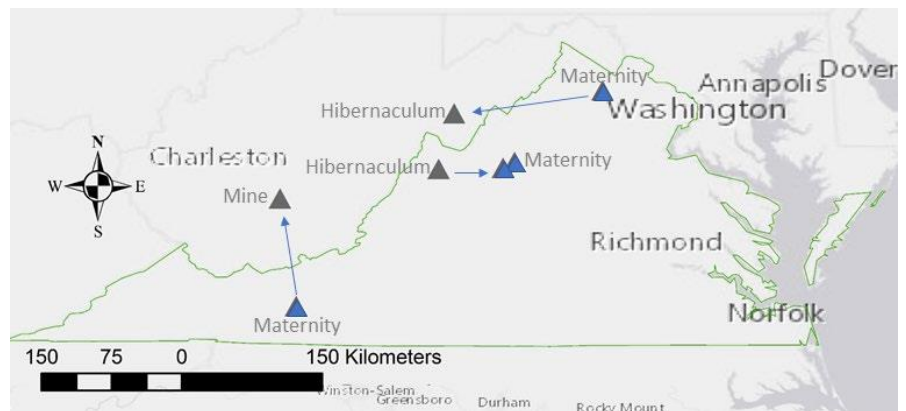
Finally, Ms. Brown mentioned that last she was proud to provide the National Association State Boating Law Administrators Paddlesports Committee Honors award to Brian Vincent of Appomattox River Company and a former DWR Board Member. This award recognizes the work of Mr. Vincent through his social media channels for his retail company to consistently highlight paddling safety messages in all their work. She mentioned that YakAttack, a kayak fishing brand headquartered in Farmville, Virginia, also received this award.

After comments and questions, The Chair thanked Ms. Brown for her update.

Non-game Program Update: The Chair called on Ms. Amy Martin for a Non-game Program Update.

Ms. Martin reported:

- **Little Brown Bat Overwintering in West Virginia:** A Virginia Tech graduate student working on fall bat habitat use at the New River Gorge National Park and Preserve mist-netted and radio tagged a little brown bat first captured in Virginia in 2021. As part of DWR's survey and monitoring efforts at little brown bat maternity colonies we banded adult females and juveniles of both sexes between 2012 and 2021. Major objectives of this effort were to determine productivity and survivorship of a species highly impacted by White-nose Syndrome. This work was conducted at 3 maternity roost, one each in Loudon, Rockingham, and Wythe counties. On September 26 the VT graduate student captured an adult male that was first captured as a young-of-the-year on July 7, 2021, at the Wythe County maternity roost. While recaptures are rare, we now have linked little brown bats from each of the known maternity colonies to winter roosts (Figure 1). These findings help DWR, and our conservation partners protect important habitats utilized by a rare species.



- **Virginia's 2nd Breeding Bird Atlas:** Virginia's Second Breeding Bird Atlas is a project to document the current geographic distribution and status of all of the Commonwealth's breeding birds. The overarching goal of the Atlas is to generate information for the benefit of avian conservation. Improved understanding of where our breeding bird species currently occur, in what numbers, and how their distribution has changed since Virginia's First Atlas over 30 years ago enables us and our partners to better target conservation planning and efforts to geographic areas where they are most needed. It also provides us with a data set against which we can make future comparisons.

In order to implement this ambitious project, the VDWR partnered with the Virginia Society of Ornithology and the Conservation Management Institute at Virginia Tech, along with a legion of over 1,400 volunteers who collected millions of bird observations across the state. Atlas data collection took place between 2016 and 2020, followed by data review, analysis and content production over the past five years. The results of the Atlas will be unveiled on October 31 through a freely accessible website. Its core component will be Species Accounts for 203 of Virginia's breeding bird species. The Accounts will feature maps of breeding distribution, breeding evidence and abundance, supported by interpretive narratives highlighting the status and conservation needs of individual species.

- **City of Alexandria Mussel Restoration:** On September 30th, staff completed the final mussel release in the Potomac River as part of a mitigation project. We completed the project one year early and produced more animals than expected. A total of 39,080 individuals representing 4 species were released over two sites in the river. Coupled with the mussel propagation and releases, the Potomac Riverkeeper offered education and media attention to the effort.
- **Tiger Salamander Habitat Management:** On October 16th, Lands & Facilities, Outreach, and Nongame staff trimmed back buttonbush (*Cephalanthus occidentalis*) at a State Endangered tiger salamander (*Ambystoma tigrinum*) breeding site in York County. Tiger salamanders prefer open canopy wetlands, and the site had become overgrown with buttonbush. They cleared approximately 1/8 of an acre, which will hopefully stimulate aquatic vegetation resulting in more favorable conditions for tiger salamanders. This is only 1 of 3 known breeding sites in the Coastal Plain.



- **Virginia Wildlife Magazine: Hellbender Story** – On September 16th and 17th, DWR State Herpetologist and Media Manager met with Virginia Tech and U.S. Forest Service (USFS) staff to gather information and media material for a feature story in Virginia Wildlife Magazine and DWR’s YouTube page. The story is primarily focused on the hellbender conservation partnership between VT and DWR, that is partially funded through a State Wildlife Grant and Paul G. Allen grant but will include the USFS post-Hurricane Helene restoration and recovery efforts. Look for this soon in Virginia Wildlife



After comments and questions, the Chair thanked Ms. Martin for her update.

Director’s Report: The Chair called on Mr. Ryan Brown for a Director’s report.

The Director reported:

- He thanked and commented Mr. Aaron Proctor, Mr. Cale Godfrey, Dr. Mike Bednarski, Ms. Amy Martin, and Ms. Stacey Brown for their work and efforts with Regulatory Reform Proposals.
- Announced that he will attend the SEAFWA in the following week.
- Announced that we will be hearing more about the Coal Easement in Southwest VA
- He gave a report of the 2025-2026 Season Harvest Updates for Early Seasons

Youth/Apprentice Deer Weekend

Statewide Archery Deer Season Opening Weekend

Early 3-Day Bear Firearms Season

Youth/Apprentice Bear Weekend

Elk Hunt

BACKGROUND: Preliminary harvest reports are available for the deer and bear youth/apprentice hunter weekends, the early 3-day bear season, the opening weekend of the statewide archery deer season, and the elk hunt. Final harvest figures for the deer and bear seasons will be available in early 2026.

Youth/Apprentice Deer Hunter Weekend (September 27-28,2025)

- Weather was not ideal (rain Saturday), but not a major challenge • Preliminary harvest was 2,638 — up 8% from last year
- Antlered buck harvest – 1,482
- Antlerless harvest — 1,156

Statewide Archery Deer Season Opening Weekend (October 4-5,2025)

- Preliminary harvest was 3,732 — up 40% from previous year.
- Antlered buck harvest — 1 ,470
- Antlerless harvest — 2,262
- Current harvest running above last year — storm systems have affected harvest numbers to past 2 weekends

Early 3-Day Bear Firearms Season (September 29 — October 1,2025)

- Seven (7) counties in SW VA — Buchanan, Dickenson, Lee, Russell, Scott, Washington, and Wise
- Had applied to 16 counties the previous 2 seasons, and originally included 41 counties when implemented in 2017 to decrease bear populations WBR
- Preliminary harvest was 56 bears — up 7% from harvest in same area during prior year
- 37 males and 19 females harvested

Youth/Apprentice Bear Hunter Weekend (October 11-12, 2025)

- Preliminary harvest was 98 bears — 27% decrease from previous year, but similar harvest to 5-year average of 103 bears
- 56 males and 42 females
- Excellent mast conditions in many areas are reducing bear movements and vulnerability to hunters

2025 Elk Hunt (October 11 - 17: 2025)

- All six (6) hunters harvested an elk and made some great friendships and memories
- We continue to thank our private landowners who provide 17,000+ acres for elk hunting
- Also thanks to the community, partners, and friends who participated in the Elk Camp/check station aspects of the hunt and make the experience extremely special for our hunters
- Seven (7) past hunters and their families returned to Buchanan County for the 2025 elk hunt, travelling from Virginia, North Carolina, and Maryland to be part of the event • Three 6x6 and three 7x7 bulls were harvested
- Live weights ranged from 701 — 810 lbs.

- B&C green scores ranged from 256 4/8 — 366 6/8, but all were trophies in the eyes of the hunters and DWR
- One bull had ear tags and GPS collar, meaning it was a Kentucky elk which had made its way to Virginia after being captured in Pike County, KY in January 2023 —15 miles away from the site of harvest
- One bull had a double cusped ivory which is the only reported instance of this condition in eastern elk herds
- Quote from one of the hunters - "I originally came to Buchanan County for the elk, expecting to be treated like an outsider. But now as I'm leaving, I realize the elk are second to the people. I feel like part of a family now. "
-

Chair's Report: The Chair asked if there were any additional business or comments, hearing none, he announced the next meeting to be Wednesday, January 21, 2026, and adjourned the meeting at 12:00 pm.

Respectfully Submitted,
Frances Boswell
/s/

VIRGINIA DEPARTMENT OF WILDLIFE RESOURCES

2026-27

MIGRATORY GAME BIRD HUNTING SEASONS – FEDERAL FRAMEWORKS AND STAFF RECOMMENDATIONS



**Prepared by Wildlife Division
January 2026**

VIRGINIA DEPARTMENT OF WILDLIFE RESOURCES

PRELIMINARY FEDERAL FRAMEWORKS AND STAFF PROPOSALS FOR 2026-27 MIGRATORY GAMEBIRD SEASON DATES AND BAG LIMITS

TABLE OF CONTENTS

Page

Dove Background Information.....	3
Dove Federal Framework and Staff Recommendation.....	4
Rail Background Information.....	5
Rail and Gallinule Frameworks and Staff Recommendations	6
Woodcock Background Information.....	7
Woodcock Federal Framework and Staff Recommendation	8
Snipe Background Information.....	9
Snipe Federal Framework and Staff Recommendation.....	10
September Teal Facts	11
September Teal Federal Framework and Staff Recommendation.....	12
Fact Sheet – Waterfowl Hunters and Harvest.....	13
Fact Sheet – Status of Ducks	14
Youth and Veterans Waterfowl Hunting Days.....	15
Duck Season.....	16
Merganser and Coot.....	17
Fact Sheet – Status of Resident Canada Geese.....	18
September Canada Goose Season Canada Geese	19
Fact Sheet – Status of Migrant Canada Geese	20
Canada Goose Populations and Hunt Zones	21
Canada Goose Seasons	22
Fact Sheet – Status of Light Geese	23
Light Goose Season	24
Light Goose Conservation Order Season	25
Fact Sheet – Status of Atlantic Brant &Tundra Swan	26
Atlantic Brant Season	27
Tundra Swan Season	28
Falconry	29

Doves

Mourning Dove Background Information and Population Status

There are three dove management units (or flyways) across the country, including the Eastern (EMU), Central (CMU) and Western (WMU) Management Units. Virginia is in the EMU.

- Population trends in the EMU:
 - 10-yr (2016-2025): Stabilized population trend.
 - Long term (1966-2025): Historically declining population trend.
- Dove Banding Project – Annual program since 2003 to leg-band over 500 doves annually in VA, and 33,000 nationwide. Data used to provide estimates of movements, survival and harvest rates, and is the main monitoring program used to develop annual hunting regulations.
- Harvest Strategy: Revised Harvest Strategy adopted in 2014 allows for a standard dove hunting season of 90 days with a bag limit of 15 birds/day when appropriate.
- Data from HIP (past 3-yr avg.): Hunters = 19,160 Harvest = 247,462

Recent Seasons

Year	Season Dates (all 70 days until extended to 90 days in 2014-15)		
2025-2026	Sept. 1 – Oct. 19	Nov. 22 – Nov. 30	Dec. 19 – Jan. 19
2024-2025	Sept. 2 – Oct. 20	Nov. 23 – Dec. 01	Dec. 20 – Jan. 20
2023-2024	Sept. 2 – Oct. 22	Nov. 18 – Nov. 26	Dec. 22 – Jan. 20
2022-2023	Sept. 3 – Oct. 23	Nov. 19 – Nov. 27	Dec. 23 – Jan. 21
2021-2022	Sept. 4 – Oct. 27	Nov. 20 – Nov. 28	Dec. 22 – Jan. 17
2020-2021	Sept. 5 – Oct. 28	Nov. 21 – Nov. 29	Dec. 24 – Jan. 19
2019-2020	Sept. 2 – Oct. 27	Nov. 27 – Dec. 4	Dec. 24 – Jan. 18
2018-2019	Sept. 1 – Oct. 28	Nov. 21 – Nov. 28	Dec. 22 – Jan. 14
2017-2018	Sept. 2 – Oct. 29	Nov. 22 – Nov. 29	Dec. 23 – Jan. 15
2016-2017	Sept. 3 – Oct. 30	Nov. 19 – Nov. 27	Dec. 24 – Jan. 15
2015-2016	Sept. 5 – Nov. 1	Nov. 21 – Nov. 29	Dec. 24 – Jan. 15
2014-2015	Sept. 1 – Oct. 31	Nov. 22 – Nov. 30	Dec. 27 – Jan. 15
2013-2014	Sept. 2 – Oct. 14	Oct. 19 – Nov. 2	Dec. 31 – Jan. 11
2012-2013	Sept. 1 – Oct. 13	Oct. 17 – Oct. 27	Dec. 28 – Jan. 12
2011-2012	Sept. 3 – Oct. 10	Oct. 25 – Nov. 5	Dec. 26 - Jan. 14
2010-2011	Sept. 4 – Oct. 11	Oct. 20 – Nov. 6	Dec. 27 – Jan. 8
2009-2010	Sept. 5 - 26	Oct. 7 – Nov. 7	Dec. 25 – Jan. 9
2008-2009	Sept. 1 - 27	Oct. 4 – Oct. 31	Dec. 27 – Jan. 10
2007-2008	Sept. 1 – 29	Oct. 5 – Oct 27	Dec. 26 – Jan. 12
2006-2007	Sept. 2 – 23	Oct. 7 – Nov. 4	Dec. 28 – Jan. 15
2005-2006	Sept. 3 – 24	Oct. 8 – Nov. 5	Dec. 27 – Jan. 14
2004-2005	Sept. 4 – 25	Oct. 9 – Nov. 6	Dec. 28 – Jan. 15
2003-2004	Sept. 1 – 27	Oct. 8 – Nov. 8	Dec. 31 – Jan. 10
2002-2003	Sept. 2 - 28	Oct. 9 – Nov. 9	Jan. 1 – Jan. 11
2001-2002	Sept. 1 - 29	Oct 13 – Nov. 10	Dec. 29 – Jan. 9

DOVE

FEDERAL FRAMEWORKS

OUTSIDE DATES: September 1, 2026 - January 31, 2027
Hunting dates may run consecutively or be split into no more than three (3) segments.

SEASON LENGTH: Not more than 90 days.

BAG LIMIT: 15 daily and 45 in possession. Daily bag limit can be composed of mourning doves and white-winged doves, singly or in combination

SHOOTING HOURS: Between ½ hour before sunrise and sunset daily (State may select ½ day shooting in any segment).

STAFF RECOMMENDATION

SEASON DATES: September 5 - October 23 (49 days)
November 21 - November 29 (9 days)
December 19 - January 18 (32 days)

SHOOTING HOURS:

September 1	Noon until sunset
September 2 – October 23	½ hr before sunrise to sunset.
November 21 – November 29	½ hr before sunrise to sunset.
December 19 - January 18	½ hr before sunrise to sunset.

BAG LIMIT: 15 daily and 45 in possession. Composed of mourning doves and white-winged doves, singly or in combination

Rails

Background Information and Population Status

- **Harvest** – Comprised predominantly of clapper rails (85%), some sora (14%), and small number of Virginia rails taken. Clappers are mostly local VA birds, some are migrants from NY, NJ, and other coastal states.
- **Nesting** - Clapper rails nest from May through June, with re-nesting in July/August. Late nesting rails have broods that do not reach flight stage until August or September. This occurs in years when 1st nests are flooded by spring storms/tides and re-nests contribute significantly to production. Therefore, we generally wait until the second week of September to open the hunting season. The key to setting the season is to bracket the greatest number of high tides possible.
- **Harvest Data** - Avg. No. hunters = 290, Avg. Harvest = 3,300 (HIP, past 5-yr avg.)

Past Seasons

<u>Year</u>	<u>Season Dates (all 70 days)</u>	
2025	Sept. 6 – Oct. 25	Nov. 11 – Nov. 30
2024	Sept. 14 – Nov. 3	Nov. 13 – Dec. 1
2023	Sept. 11 – Nov. 5	Nov. 13 – Nov. 26
2022	Sept. 9 – Nov. 17	
2021	Sept. 7 – Nov. 15	
2020	Sept. 9 – Nov. 17	
2019	Sept. 7 – Nov. 15	
2018	Sept. 8 - Nov. 16	
2017	Sept. 9 – Nov. 17	
2016	Sept. 10 - Nov. 18	
2015	Sept. 8 - Nov. 16	
2014	Sept. 8 – Nov. 16	
2013	Sept. 7 - 28	Sept. 30 – Nov. 16
2012	Sept. 8 – 29	Oct. 1 – Nov. 17
2011	Sept. 10 – Oct. 1	Oct. 3 – Nov. 19
2010	Sept. 8 – Oct. 2	Oct. 4 – Nov. 17
2009	Sept. 8 – Oct. 3	Oct. 5 – Nov. 17
2008	Sept. 10 – Nov. 18	
2007	Sept. 10 – Nov. 17	
2006	Sept. 8 – Nov. 16	
2005	Sept. 12 – Nov. 19	
2004	Sept. 13 – Nov. 20	
2003	Sept. 10 – Nov. 18	
2002	Sept. 9 - Nov. 16	
2001	Sept. 11 – Nov. 19	
2000	Sept. 13 – Oct. 2	Oct. 11 – Nov. 29

RAILS (Clapper, King, Sora, Virginia) & Gallinules (Common, Purple)

FEDERAL FRAMEWORKS

OUTSIDE DATES: September 1, 2026 - January 31, 2027

SEASON LENGTH: 70 days, straight or 2 segments.

DAILY BAG LIMIT: Clapper/King - 15, in aggregate.
Sora/Virginia - 25, in aggregate.
Gallinules - 15, in aggregate.

SHOOTING HOURS: ½ hour before sunrise until sunset daily

STAFF RECOMMENDATION

SEASON DATES: September 5 – October 24 (50 days)
November 10 – November 29 (20 days)

DAILY BAG LIMIT: Clapper/King: **10** - in aggregate, only 1 can be a King Rail.
Sora/Virginia: 25 - in aggregate.
Gallinules: 15 - in aggregate.

SHOOTING HOURS: ½ hour before sunrise until sunset

NOTES: - This recommendation provides 30 days of 3-ft or greater lunar tides.
- Non-Toxic shot is required for Rail, Snipe and Gallinule hunting in Virginia.

Woodcock

Background Information and Population Status

- Harvest Strategy includes 3 regulatory options (Liberal, Moderate and Restrictive). Annual regulation based on the 3-year mean of the call count survey. For 2026-27, Harvest Strategy calls for Moderate Regulations (45 days/3 birds).
- Singing-ground survey (SGS) in Eastern Management Region from most recent survey:
 - 1 year trend (2024-2025): 0.72% decrease
 - 10 year trend (2015-2025): 0.05% decline per year.
 - Long-term (1968-2025): 0.74% decline per year.
- The 2024 recruitment index for the U.S. portion of the Eastern Region (1.14 jv/ad female) was 25% less than the 2023 index and 29.5% lower than the long-term index.
- Research suggests that habitat loss is the major factor of the long-term population decline.
- Virginia participated in a Flyway-wide study of woodcock movements and habitat use for the past several years. GPS transmitters are tracking woodcock migration routes and chronology, and this data is being used to better inform woodcock management strategies and hunting seasons.
- Federal regulations prohibit zones for woodcock hunting, however, we are permitted to split the season into two segments. In Virginia, this allows us to provide both early and late opportunities for hunters across the state.

Recent Seasons (bag limit has been 3 birds)

<u>Year</u>	<u>Season Dates</u>		<u>Days</u>
2025-2026	Nov. 11 – Nov. 30	Dec. 26 – Jan. 19	45
2024-2025	Nov. 11 – Nov. 30	Dec. 27 – Jan. 20	45
2023-2024	Nov. 10 – Nov. 27	Dec. 26 – Jan. 21	45
2022-2023	Nov. 11 – Dec. 3	Dec. 27 – Jan. 17	45
2021-2022	Nov. 11 – Dec. 8	Dec. 27 – Jan. 12	45
2020-2021	Nov. 7 – Nov. 30	Dec. 24 – Jan. 13	45
2019-2020	Nov. 20 – Dec. 8	Dec. 21 – Jan. 15	45
2018-2019	Oct. 27 – Nov. 2	Dec. 8 – Jan. 14	45
2017-2018	Nov. 20 – Dec. 8	Dec. 21 – Jan. 15	45
2016-2017	Oct. 29 – Nov. 4	Dec. 9 – Jan. 15	45
2015-2016	Nov. 23 – Dec. 5	Dec. 15 – Jan. 15	45
2014-2015	Nov. 24 – Dec. 6	Dec. 15 – Jan. 15	45
2013-2014	Oct. 26 – Nov. 1	Dec. 5 – Jan. 11	45
2012-2013	Oct. 27 – Nov. 2	Dec. 6 – Jan. 12	45
2011-2012	Oct. 29 – Nov. 12	Dec. 16 – Jan. 14	45
2010-2011	Oct. 30 – Nov. 13	Dec. 27 – Jan. 10	30
2009-2010	Nov. 7 – 21	Dec. 26 – Jan. 9	30
2008-2009	Nov. 8 – 22	Dec. 20 – Jan. 3	30
2007-2008	Oct. 27 – Nov. 10	Dec. 22 – Jan. 5	30
2006-2007	Nov. 4 – 18	Dec. 23 – Jan. 6	30
2005-2006	Nov. 12 – 26	Dec. 17 – Dec. 31	30

Avg. No. hunters = 3,200. Avg. Harvest = 5,500 (Estimates for 2024-2025 Season.)

WOODCOCK

FEDERAL FRAMEWORKS

OUTSIDE DATES: September 13, 2026 - January 31, 2027

SEASON LENGTH: 45 days, straight or 2 segments.

BAG LIMIT: 3 daily, 9 in possession.

SHOOTING HOURS: ½ hour before sunrise until
sunset daily.

STAFF RECOMMENDATION

SEASON DATES: November 10 – November 30 (21 days)
December 24 – January 18 (24 days)

BAG LIMIT: 3 daily, 9 in possession

SHOOTING HOURS: ½ hour before sunrise until sunset

Snipe

Background Information

- Season generally set to overlap duck season. There are relatively few snipe hunters in VA and most snipe are taken opportunistically by other migratory bird hunters.
- Harvest Data (HIP, past 5-yr avg.): No. hunters = 225, Harvest = 550

Recent Seasons

<u>Year</u>	<u>Season Dates (all 107 days)</u>	
2025-2026	Sept. 29 – Nov. 30	Dec. 19 – Jan. 31
2024-2025	Sept. 30 – Dec. 1	Dec. 19 – Jan. 31
2023-2024	Sept. 25 – Nov. 26	Dec. 19 – Jan. 31
2022-2023	Sept. 26 – Nov. 27	Dec. 17 – Jan. 29
2021-2022	Oct. 8 – Oct. 11	Oct. 21 – Jan. 31
2020-2021	Oct. 9 – Oct. 12	Oct. 21 – Jan. 31
2019-2020	Oct. 11 – Oct. 14	Oct. 21 – Jan. 31
2018-2019	Oct. 5 – Oct. 8	Oct. 21 – Jan. 31
2017-2018	Oct. 6 – Oct. 9	Oct. 21 – Jan. 31
2016-2017	Oct. 7 – Oct. 10	Oct. 21 – Jan. 31
2015-2016	Oct. 9 – Oct. 12	Oct. 21 – Jan. 31
2014-2015	Oct. 10 – Oct. 13	Oct. 21 – Jan. 31
2013-2014	Oct. 11 – Oct. 14	Oct. 22 – Jan. 31
2012-2013	Oct. 4 – Oct. 8	Oct. 22 - Jan. 31
2011-2012	Oct. 6 – Oct. 10	Oct. 22 – Jan. 31
2010-2011	Oct. 7 – Oct. 11	Oct. 22 – Jan. 31
2009-2010	Oct. 8 – Oct. 12	Oct. 21 – Jan. 30
2008-2009	Oct. 9 – Oct. 13	Oct. 22 – Jan.31
2007-2008	Oct 4 – Oct. 8	Oct. 22 – Jan. 31
2006-2007	Oct 4 – Oct. 9	Oct. 23 – Jan. 31
2005-2006	Oct 5 – Oct.10	Oct. 24 – Jan. 31
2004-2005	Oct 7 – Oct 11	Oct. 22 – Jan. 31
2003-2004	Oct. 8 – Oct 11	Oct. 21 – Jan. 31
2002-2003	Oct 9 – Oct 12	Oct. 21 – Jan. 31
2001-2002	Oct. 10 - Oct. 13	Oct. 22 - Jan. 31
2000-2001	Oct. 11 - Oct. 14	Oct. 21 - Jan. 31
1999-2000	Oct. 6 - Oct. 9	Oct. 21 - Jan. 31
1998-1999	Oct. 7 - Oct. 10	Oct. 20 - Jan. 30
1997-1998	Oct. 8 - Oct. 11	Oct. 21 - Jan. 31
1996-1997	Oct. 9 - Oct. 12	Oct. 21 - Jan. 31
1995-1996	Oct. 11 - Oct. 14	Oct. 21 - Jan. 31

SNIFE

FEDERAL FRAMEWORKS

OUTSIDE DATES: September 1, 2026 - January 31, 2027

SEASON LENGTH: 107 days, straight or 2 segments

BAG LIMIT: 8 daily, 24 possession

SHOOTING HOURS: ½ hour before sunrise until sunset

STAFF RECOMMENDATION

SEASON DATES: September 28 – November 29 (63 days)
December 19 – January 31 (44 days)

BAG LIMIT: 8 daily, 24 in possession

SHOOTING HOURS: ½ hour before sunrise until sunset

SEPTEMBER TEAL SEASON FACT SHEET - 2026

- Special teal seasons were initiated in late 1960's to provide harvest opportunities on blue-winged and green-winged teal. When the blue-winged teal breeding population (BPOP) is above 3.3 million, a 9-day season can be offered. If the BPOP exceeds 4.7 million, a 16-day season can be offered. The blue-winged teal BPOP estimate for 2025 is 4.4 million which corresponds to a 9-day teal season for the 2026-2027 hunting season.
- Blue-winged teal are one of the earliest migrants. Many pass through Virginia from late August through October, prior to the opening of the late duck season.
- Green-winged teal are also early migrants and arrive in September and October. However, some Green-wings remain through the winter depending on weather conditions.
- Virginia has held a special September teal season since 1999 (see dates listed below). The season was initially held only in the area east of I-95 because there are greater numbers of teal and teal hunters in the coastal plain. Even in the coastal plain, teal are not widespread, and the harvest has been relatively small. The season was expanded in 2011 to provide some teal hunting opportunity in the area west of I-95.

<u>Year</u>	<u>Season Dates</u>	<u>Season Dates</u>
	<u>East of I-95</u>	<u>West of I-95</u>
2025	Sept. 20 – 28	Sept. 23 - 28
2024	Sept. 16 – 30	Sept. 21 - 30
2023	Sept. 17 – 30	Sept. 21 - 30
2022	Sept. 17 – 30	Sept. 21 - 30
2021	Sept. 17 – 30	Sept. 21 - 30
2020	Sept. 17 – 30	Sept. 21 - 30
2019	Sept. 17 – 30	Sept. 21 - 30
2018	Sept. 17 – 30	Sept. 21 - 30
2017	Sept. 16 – 30	Sept. 21 - 30
2016	Sept. 17 – 30	Sept. 21 - 30
2015	Sept. 17 – 30	Sept. 21 - 30
2014	Sept. 17 – 30	Sept. 22 - 30
2013	Sept. 16 – 30	Sept. 23 - 30
2012	Sept. 17 – 29	Sept. 24 - 29
2011	Sept. 19 – 30	Sept. 26 - 30
2010	Sept. 20 – 30	na
2009	Sept. 21 – 30	na
2008	Sept. 20 – 30	na
2007	Sept. 17 – 26	na
2006	Sept. 15 – 25	na
2005	Sept. 16 – 24	na
2004	Sept. 16 – 25	na
2003	Sept. 13 – 23	na
2002	Sept. 14 – 24	na

Average Annual Harvest: 600 teal

SEPTEMBER TEAL SEASON

FEDERAL FRAMEWORKS

OUTSIDE DATES: September 1 – September 30, 2026

SEASON LENGTH: Up to 9 days

BAG LIMIT: 6 daily, 18 in possession (Blue-winged and Green-winged teal only)

SHOOTING HOURS: ½ hour before sunrise to sunset

STAFF RECOMMENDATION

SEASON DATES: September 19 – September 27
HUNT AREA: East of I – 95

September 22 – September 27
HUNT AREA: West of I – 95

BAG LIMIT: 6 daily, 18 in possession (Blue-winged and Green-winged teal only).

SHOOTING HOURS: ½ hour before sunrise to sunset

FACT SHEET - Waterfowl Hunters and Harvests – 2026

- Liberal duck seasons (60 days, 6 bird bag limit) and resident goose seasons have resulted in high waterfowl harvests in Virginia during the past ten years. Harvest has averaged ~151,993 ducks and ~41,855 Canada geese from 2022-2024, compared to 114,770 ducks and 25,000 geese during the 1990's. The long season length and liberal bags offer greater opportunity and a greater cumulative harvest over the course of the season.
- Waterfowl hunter numbers in Virginia have been generally stable since the late 1990's. Since 1999, the Harvest Information Program (HIP) has been used to estimate hunter effort and harvest. The average number of duck and goose hunters over the past 3 years, as measured by HIP, was 16,800 and 10,555 respectively.
- Conditions during the 2024-2025 season were colder for most of the season but puddle duck harvest was lower than the previous year. Buffleheads were the most harvested duck in Virginia, followed by mallards, green-winged teal, black ducks and gadwall.

FACT SHEET - The Status of Ducks - 2026

- Waterfowl harvest in the Atlantic flyway is managed by the stocks of four different species of eastern waterfowl populations (wood ducks, American green-winged teal, ring-necked ducks and goldeneyes). In 2025 estimated breeding population size for wood ducks was 0.95 million (SE = 0.12 million), 0.34 million (SE = 0.08 million) for American green-winged teal, 0.76 million (SE = 0.18 million) for ring-necked ducks and 0.72 million (SE = 0.24 million) for goldeneyes.
- The total 2025 mid-continent mallard breeding population is predicted to be 6.56 million (SE = 0.26 million)

Virginia: Habitat conditions in Virginia during the spring of 2025 were average with slightly drier conditions towards the end of the breeding season that could have potentially impacted brood rearing habitat.

- The 2025 Virginia breeding pair estimate for mallards (15,100) was lower than last year (21,033). Estimated black duck pairs (64) decreased from last year (629). The number of Wood duck pairs (6,245) was lower than last year (9,259). The breeding pair estimate for Canada geese (25,230) was also lower than the 2023 estimate (44,516).

Mallard Bag Limit in the Atlantic Flyway

The mallard has been one of the most abundant duck species in eastern North America. However, mallard numbers in the Northeastern U.S. declined about 40% from the late 1990's through around 2019. About 60% of the mallards harvested in Atlantic Flyway states, and around 80% of those harvested in Virginia, are derived from the Northeastern U.S. Mallard numbers in Eastern Canada were stable or slightly increasing during this same time period, but overall, the breeding mallard population in eastern North America had declined. This decline prompted waterfowl managers to enact harvest restriction on mallards in the Atlantic Flyway in 2019. The bag limit was reduced from 4 to 2 mallards daily, with a limit of 1 hen mallard. Those restrictions were in place for the past 4 hunting seasons.

Since 2019, Eastern Mallard numbers have increase 15%. In addition, a new Eastern Mallard Harvest Strategy and Population Model was developed based on recent population dynamics. This Strategy was put in place for 2023-2024 hunting season regulation process, and allows for a return to a 4-mallard bag limit (2 hens). Projections from the new harvest strategy indicate that under current conditions, Atlantic Flyway regulations should allow for a liberal mallard bag limit (4 mallards total, only 2 hens) around 80% of the time.

YOUTH and VETERANS WATERFOWL DAYS

Guidelines for the Youth Days and Veterans Days include:

1. States may select 2 days per duck-hunting zone, designated as "Youth Waterfowl Hunting Days," in addition to their regular duck seasons. States may also select 2 days per duck-hunting zone designated as "Veterans Waterfowl Hunting Days" in addition to their regular duck seasons. The Youth and Veterans days could be combined and held on the same day or could be held separately.
2. Youth Days must be held outside of any regular duck season on a weekend, holidays, or other non-school days when youth hunters would have the maximum opportunity to participate.
3. Youth and Veterans Days could be held up to 14 days before or after any regular duck season frameworks or within any split of a regular duck season.
4. The daily bag limit is the same as that allowed in the regular season and includes ducks, mergansers, coots, moorhens, gallinules, 1 Canada geese (except in Canada Goose Zones where the bag limit is higher), and 1 tundra swan (if the hunter possesses a tundra swan permit). Flyway species restrictions remain in effect.
5. Youth hunters must be 15 years of age or younger. Youth 12 years of age and older will need a valid Virginia state hunting license. A licensed adult at least 18 years of age or older must accompany youth hunters into the field. This adult may not duck hunt but may participate in other open seasons.
6. Those allowed to participate in the special **Veterans Days** include Veterans (as defined in section 101 of title 38, United States Code) and members of the Armed Forces on active duty, including members of the National Guard and Reserves on active duty (other than for training).

DUCKS

FEDERAL FRAMEWORK

Outside Dates: September 27, 2026 - January 31, 2027

Season Length: 60 hunting days; plus 2 Youth/Veterans Waterfowl Hunt Days.

Bag Limits: **Daily Bag limit of 6 ducks, with the following restrictions:**
Can include no more than 4 mallards (only 2 hens), 3 wood ducks, 2 black ducks, 2 canvasbacks, scaup: 1/day for 40 days and 2/day for 20 days, 2 redheads, 3 pintails, 1 mottled duck, 1 fulvous whistling duck, 4 total sea ducks (no more than 3 scoters, 3 eider (only 1 hen), 3 long-tailed ducks). Closed season on harlequin duck. Possession limit is three times the daily bag limit.

Split Season Options: 3-way split season, no zones

Shooting Hours: 1/2-hour before sunrise until sunset daily

STAFF RECOMMENDATIONS

Season Length: 60 hunting days; plus 2 Youth/Veterans Waterfowl Hunting Day

Season Dates: October 9 - 12 (Black Duck closed) (4 Days)
November 18 – November 29 (12 Days)
December 19 – January 31 (44 Days)
October 24, February 6 – Youth/Veterans Waterfowl Days

Bag Limit: **Daily Bag limit of 6 ducks, with the following restrictions:** can include no more than 4 mallards (only 2 hens), 3 wood ducks, 2 black ducks (except closed Oct. 11–14), 2 redheads, 2 canvasbacks, 3 pintails, 1 mottled duck, 1 fulvous whistling duck, scaup: 1/day from October 9-12, November 18-November 29, December 19 - January 11, and 2/day from January 12-31. Sea Ducks: 4 total sea ducks to include no more than 3 scoters, 3 eiders (only 1 hen), 3 long-tailed ducks. Closed season on harlequin ducks. The possession limit is three times the daily bag limit.

Shooting Hours: 1/2-hour before sunrise until sunset daily

MERGANSE AND COOT

MERGANSE

FEDERAL FRAMEWORK

Option A

<u>Season Length:</u>	60 hunting days.
<u>Outside Date:</u>	September 27, 2026 - January 31, 2027.
<u>Bag Limit:</u>	5 birds daily. 15 in possession.

Option B

To be included into the general duck bag. If included in the general duck bag, the restriction on 2 hooded mergansers would apply.

STAFF RECOMMENDATIONS

Option A

<u>Season Dates:</u>	To coincide with general duck season
<u>Bag Limit:</u>	5 birds daily, 15 in possession.

AMERICAN COOT

FEDERAL FRAMEWORK

<u>Season Length:</u>	60 hunting days
<u>Outside Date:</u>	September 27, 2026 - January 31, 2027
<u>Bag Limit:</u>	15 birds daily (45 in possession)

STAFF RECOMMENDATIONS

<u>Season Dates:</u>	To coincide with general duck season.
<u>Bag Limit:</u>	15 daily (45 in possession)

FACT SHEET - The Status of Resident Canada Geese - 2026

- The resident Canada goose population increased significantly in Virginia during the 1980's and 1990's, and peaked at 260,000 geese in the late 1990's. This population caused significant conflicts with human and wildlife populations, and management actions were taken to reduce their numbers. The current population estimate is 158,605 (+/- 25%) in Virginia and over 1 million in the Atlantic Flyway.
- Special resident goose hunting seasons were initiated in 1993 to help manage this population and to provide recreational opportunities for hunters. These seasons occur prior to the arrival of most migrant geese (~Sept. 25 in Virginia), or in areas where there are fewer migrant geese. The Federal Framework allows Virginia to conduct a statewide September Resident Goose season from September 1-25.
- There are fewer migrant geese in the western portion of Virginia, and special "Goose Hunting Zones" have been established that allow more liberal seasons in areas with a greater percentage of resident geese.
- Special resident goose hunting seasons have been very popular and have increased hunter participation and resident goose harvests. These seasons have been very effective in managing resident goose populations and helping to meet our statewide population objectives.
- In areas where hunting is not feasible, other options including special Depredation Orders for Airports, Agricultural areas, and Nest and Egg removal have been implemented to help manage resident goose conflicts.

Year	Population Estimate *	September Harvest
2024	143,529 +/- 29%	n/a
2023	161,747 +/- 24%	n/a
2022	170,540 +/-26%	3,300
2021	177,056 +/-29%	6,300
2020	163,198 +/- 24%	13,000
2019	125,966 +/-20%	6,300
2018	132,633 +/- 24%	5,600
2017	142,167 +/- 21%	5,500
2016	158,200 +/- 19%	900
2015	150,651 +/- 22%	6,100
2014	130,503 +/- 26%	7,500
2013	144,910 +/- 26%	10,700
2012	158,267 +/- 28%	9,700
2011	165,022 +/- 28%	14,700
2010	147,313 +/- 29%	15,600
2009	145,019 +/- 29%	16,800
2008	157,560 +/- 29%	17,500
2007	154,030 +/- 27%	13,600
2006	136,700 +/- 27%	11,100
2005	129,486 +/- 26%	10,100
2004	143,741 +/- 25%	17,000
2003	186,753 +/- 23%	14,800
2002	218,719 +/- 24%	14,300
2001	218,384 +/- 27%	11,800
2000	227,164 +/- 32%	10,800
1999	261,554 +/- 34%	11,400

*3-year running average

SEPTEMBER CANADA GOOSE

FEDERAL FRAMEWORKS

OUTSIDE DATES: September 1 – September 25, 2025

BAG LIMIT: 15 daily, 45 in possession

SHOOTING HOURS: ½ hour before sunrise to sunset (except as provided for in special hunting options *)

* SPECIAL HUNTING OPTIONS: Allows the use of electronic calls, unplugged shotguns and extended shooting hours (1/2 hr after sunset) when **no other** waterfowl seasons are open.

STAFF RECOMMENDATION

SEASON DATES: September 1 – September 25 (25 days)

BAG LIMIT: 10 daily, 30 in possession

HUNT AREA: Statewide

SHOOTING HOURS:

East of I-95
September 1 – 18: ½ hr before sunrise to ½ hr **after** sunset.
September 19 – 25: ½ hr before sunrise **to sunset.**

West of I-95
September 1 – 21: ½ hr before sunrise to ½ hr **after** sunset.
September 22 – 25: ½ hr before sunrise **to sunset.**

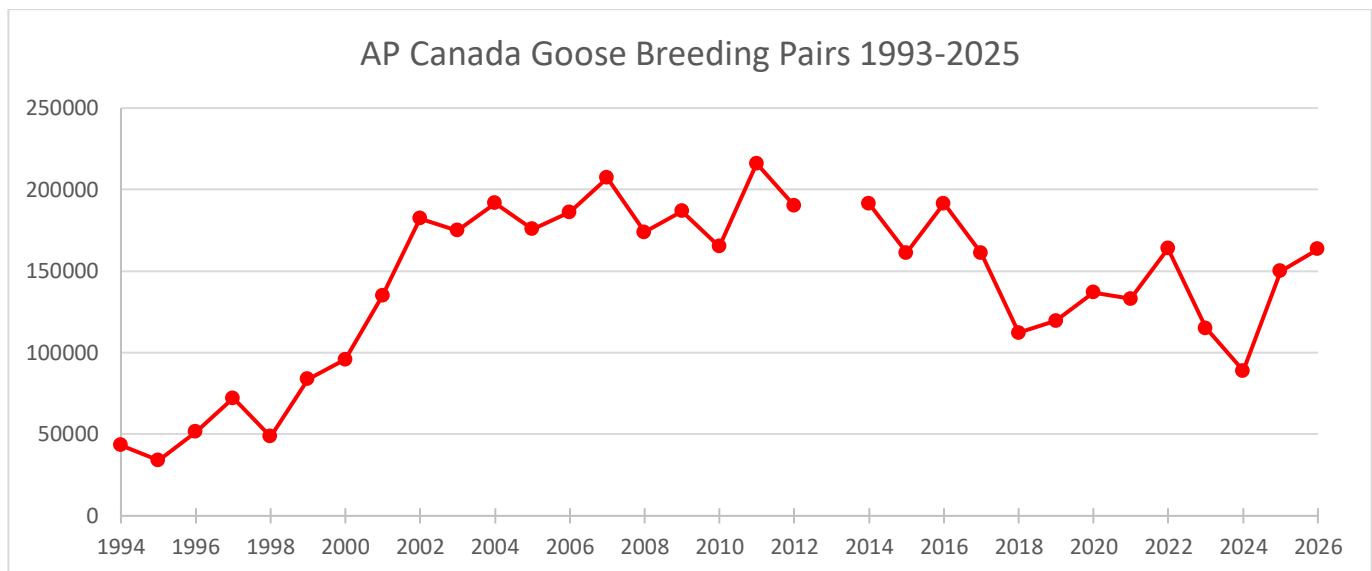
NOTE: Shotguns capable of holding more than 3 shells may be used when no other waterfowl seasons are open (September 1-18 East of I-95 and September 1-21 West of I-95).

Staff is **not** recommending the options of using electronic calls.

FACT SHEET- History and Status of Migrant Canada Geese - 2026

- Migrant Canada geese from the Atlantic Population (AP) declined significantly from 1985-1995. The hunting season was closed in 1995 to allow the population to recover. Goose numbers rebounded quickly and a limited season (6 days with a 1-bird bag) was held in both 1999 and 2000. As the population increased, the season was extended to 30 days in 2001, then 45 days in 2002, and 50 days from 2012-2018.
- As the population increased, hunting regulations were liberalized. The season was extended to 30 days in 2001, then 45 days in 2002, and 50 days in 2012. The AP bag limit was increased to 2 per day in 2004. In 2019 the AP bag limit was again reduced to 1 per day with a 30-day season. This was the result of several years of poor conditions on the arctic breeding grounds.
- After several years of below average productivity, two concurrent above average breeding seasons led to an increase in AP Canada goose production. This led to liberal harvest regulations for the 2022-2023 hunting season. Unfortunately, this was followed by a poor production year in 2023 and 2024 where the observed pair estimates (115,300 in 2023) and (89,000 in 2024) were down significantly from 2022 (164,000). The 2026 predicted number of breeding pairs based on the integrated population model was 163,500 which is above the 160k pair threshold for which liberal harvest regulations are recommended in the AP Canada goose Harvest Strategy. The 2026-2027 harvest recommendation is the liberal package which is a 45-day season and a 2 bird bag limit in the AP zone.

Figure 1. Atlantic Population Canada Goose Breeding Pair survey estimates 1993-2025.

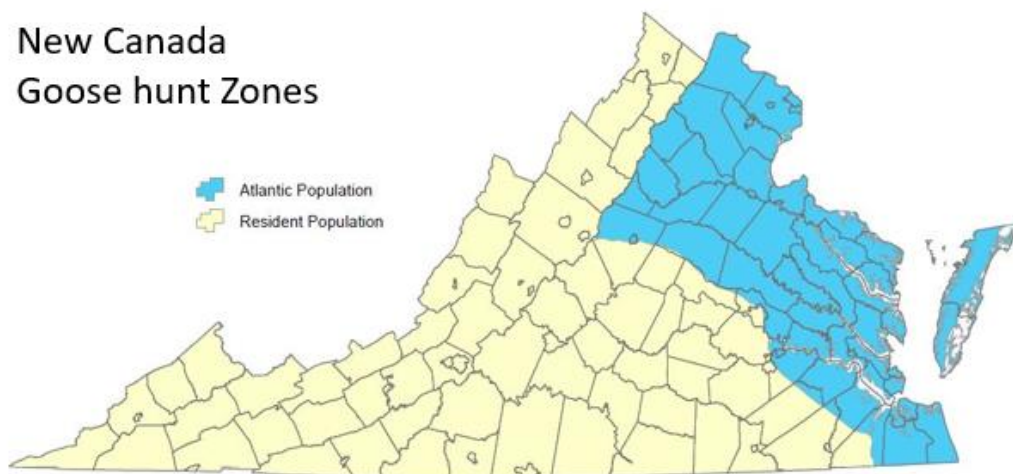


Canada Goose Populations and Hunt Zones

- In 2020 there was a change in the way the Atlantic Flyway, the Mississippi Flyway and the U.S. Fish and Wildlife Service are defining and managing the different “Migrant” Canada goose populations in the Eastern United States. The Southern James Bay Population (SJBP) is no longer recognized as a separate population, and the eastern portion of this population is now considered part of the Atlantic Population (AP). The Atlantic Population along with the North Atlantic Population (NAP) are now the only recognized subpopulations of “migrant” Canada geese in the Atlantic Flyway. Nearly all the migrant geese that winter in Virginia are from the Atlantic Population, with only ~1% from the NAP.
- Due to this change, during the 2023-2024 season Virginia had to eliminate the SJBP Hunting Zone in Virginia. Some of this former zone (predominantly the northern portion) has been placed in the AP Zone, while the remainder of the area, where fewer migrant geese are located, has been included in the Resident Population Zone (RP).
- The hunting regulations for those areas that are now part of a different zone have changed significantly, so hunters need to make sure they are aware of the new zone boundaries. The description and map of these new Canada geese hunt zones is shown below.

Atlantic Population (AP) Hunt Zone – The area to the east of the following line: the “Blue Ridge” (Loudoun County-Clarke County border) at the West Virginia-Virginia Border, south to Interstate 64 (the Blue Ridge line follows county borders along the western edge of Loudoun-Fauquier-Rappahannock-Madison-Greene-Albemarle and into Nelson Counties), then east along Interstate Rt. 64 to Interstate 95 in Richmond, then south along I-95 to Route 460 in Petersburg, then southeast along Route 460 to Route 32 in the City of Suffolk, then south to the North Carolina border.

Resident Population (RP) Hunt Zone – The portion of the state west of the above AP Zone boundary.



CANADA GOOSE

FEDERAL FRAMEWORKS

ATLANTIC POPULATION ZONE (AP):

Outside Dates:

November 15, 2026 – February 5, 2027

Season Length:

45 hunting days

Bag Limit:

2 birds daily (6 in possession)

RESIDENT POPULATION ZONE (RP):

Outside Dates:

November 15, 2026 – March 10, 2027

Season Length:

80 hunting days

Bag Limit:

5 birds daily (15 in possession)

NOTE – All seasons also include White-fronted geese along with Canada geese.

STAFF RECOMMENDATIONS

ATLANTIC POPULATION ZONE: (AP)

Season Dates:

November 24 – November 29 (6 days)

December 24 – January 31 (39 days)

Bag Limit:

2 geese per day (6 in possession)

Shooting Hours:

1/2-hour before sunrise until sunset daily

RESIDENT POPULATION ZONE: (RP)

Season Dates:

November 18 – November 29

December 19 - February 21

Bag Limit:

5 geese daily (15 in possession)

Shooting Hours:

1/2-hour before sunrise until sunset daily

NOTE – All seasons also include White-fronted geese along with Canada geese.

FACT SHEET - Status of Light Geese (Greater and Lesser Snow Geese, and Ross's Geese) - 2026

- The majority (95%) of the “Light” geese found in the Atlantic Flyway are Greater Snow Geese, while less than 5% are Lesser Snow Geese, with even smaller numbers of Ross's Geese.
- The principal nesting areas for greater snow geese are on Bylot, Axel Heiberg, Ellesmere, and Baffin Islands, and on Greenland. They winter along the Atlantic Coast from New Jersey to North Carolina.
- The Greater Snow Goose population is monitored on spring staging areas along the St. Lawrence Valley in Quebec. The 2025 population estimate was 428,000 geese. This estimate was lower than the population objective of 500,000 for the first time since the early 1990's.
- Banding crews at the major snow goose breeding colony on Bylot Island reported above average nest densities and low levels of nest predation.
- Over the last 30 years, snow goose populations increased nearly ten-fold. A shift from feeding almost exclusively in marshes to feeding more on agricultural grains has allowed them to expand their range and habitat use. This shift has also allowed them to return to their breeding habitats in better physical condition, which has led to increased productivity.
- This population has generally stabilized over the past 5 year, however concerns about habitat degradation on their breeding, migration and wintering areas still remain. Snow geese can cause damage to these habitats by pulling up plant roots and denuding marshes of vegetation. Snow geese can also cause conflicts with agricultural interest by pulling up green grains including wheat and barley.
- Current hunting regulations for snow geese are as liberal as Federal Frameworks will allow and include a 107-day season that runs from October to January, and a bag limit that was increased from 15 to 25 in 2010. Liberal seasons have helped increase the harvest, and the population has recently dropped below the population objective of 500,000.
- In addition to the regular hunting season, a Conservation Order (CO) was established in 2009 that authorizes additional snow goose hunting after the end of the regular season frameworks. The CO allows the use of alternative management strategies (unplugged shotguns, electronic calls, shooting to ½ hour after sunset, no daily bag limit) to further increase the harvest of snow geese. The snow goose harvest in Virginia has averaged around 300 birds during the regular season and 600 birds during the Conservation Order over the past 5 years. A decision on the future of the CO will be made in the fall of 2026.

LIGHT GOOSE SEASONS

REGULAR LIGHT GOOSE SEASON

FEDERAL FRAMEWORK

<u>Season Length:</u>	107 hunting days
<u>Outside Dates:</u>	October 1, 2026 - March 10, 2027
<u>Split Season Option:</u>	3-way split season
<u>Bag Limit:</u>	25 birds daily (no possession limit)

STAFF RECOMMENDATIONS

<u>Season Dates:</u>	November 24 – March 10, 2027	(106 days)
<u>Bag Limit:</u>	25 birds daily (no possession limit)	

LIGHT GOOSE CONSERVATION ORDER

FEDERAL FRAMEWORK

Outside Dates:

When no other waterfowl seasons are open

Bag Limit:

No daily or possession limit

Special Hunting Methods:

Electronic calls, unplugged shotguns and extended shooting hours to one-half hour after sunset **only in areas and at times when other waterfowl seasons are closed.**

Special Requirements:

States participating in the Conservation Order are required to monitor hunter participation, effort, and success.

STAFF RECOMMENDATION

Conservation Order Zone: The same as the new AP Canada Goose Zone - The area to the east of the following line: the “Blue Ridge” (Loudoun County-Clarke County border) at the West Virginia-Virginia Border, south to Interstate 64 (the Blue Ridge line follows county borders along the western edge of Loudoun-Fauquier-Rappahannock-Madison-Greene-Albemarle and into Nelson Counties), then east along Interstate Rt. 64 to Interstate 95 in Richmond, then south along I-95 to Route 460 in Petersburg, then southeast along Route 460 to Route 32 in the City of Suffolk, then south to the North Carolina border.

Season Dates:

TBD

Bag Limit:

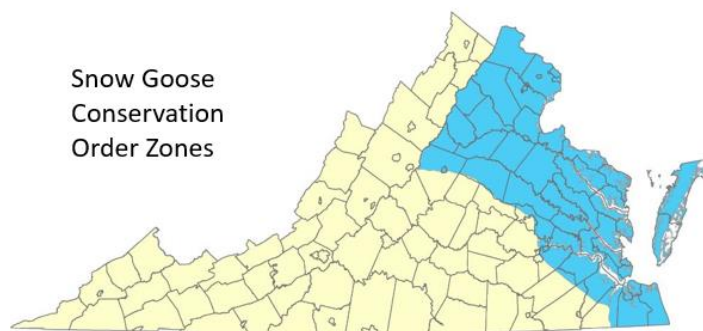
No daily or possession limit

Special Hunting Methods:

Electronic calls, unplugged shotguns and extended shooting hours to one-half hour after sunset.

Special Requirements:

Hunters participating in the Conservation Order **must register with DWR**, keep a record of their harvest and participation, and return a harvest report form within two weeks following the close of the season.



FACT SHEET - Status of Atlantic Brant and Tundra Swan - 2026

- **BRANT.** The main breeding areas for Atlantic Brant are in the Eastern Canadian Arctic on Baffin, Southampton, and Ellesmere Islands. Most brant winter along the Atlantic Coast from MA to NC.
- The 2025 mid-winter survey count for brant was 132,306, which was higher than the previous year's count (121,000) and higher than the previous 3-year average (122,736). The Atlantic brant productivity estimate was 8.6%. Which was higher than the previous year estimate (16.7%) but still lower than the long-term average.
- The annual brant hunting regulation is now based on the Atlantic Brant Integrated Population Model (IPM) that was adopted by the Atlantic Flyway in 2021 and provides an index to the brant population. The model prediction for 2026 is 115,000. As per the Brant Harvest Strategy, this estimate calls for a 2024-2025 harvest regulation of 30 days with a 1-bird daily limit.
- **TUNDRA SWANS.** The Eastern Population of tundra swans nest in arctic tundra areas from Alaska, east to Hudson Bay and Baffin Island. These birds winter in coastal areas from Maryland to North Carolina.
- Estimated productivity of eastern population tundra swans in 2024 was 11% immature birds. This estimate is higher than the 2023 estimate (10%) and similar to the long-term average (11%).
- There were 66,528 eastern population tundra swans counted in the Atlantic Flyway on the 2025 Mid-Winter Survey. This count was 36% higher than last year, but still below the past 10-year average (2016-2025: 87,226)
- Nine states in the U.S. hunt tundra swans including Alaska, Utah, Montana and Nevada in the Pacific Flyway, North Dakota and South Dakota in the Central Flyway, and Delaware, Virginia and North Carolina in the Atlantic Flyway.
- There are no changes in the total number of hunting permits allowed for EP tundra swans this year (9,600 across the U.S., with 5,600 of those in the Atlantic Flyway) as the population estimate is still within the 70,000 to 110,000 range. In the Atlantic Flyway, the allocation of hunt permits is split between the 3 states in approximate proportion to the number of swans in each state. The 5,600 permits available in the Atlantic Flyway for the 2026-2027 season will be distributed as follows: NC- 4,853, VA-475, and DE-272.
- The tundra swan hunting season in Virginia is authorized and conducted as specified in the Atlantic Flyway Tundra Swan Management Plan and Hunt Plan, with limits and guidelines as specified under an MOU with the U.S. Fish and Wildlife Service.

ATLANTIC BRANT

FEDERAL FRAMEWORK

<u>Season Length:</u>	30 hunting days
<u>Outside Dates:</u>	September 23, 2026 - January 31, 2027
<u>Split Season Option:</u>	2-way split season
<u>Bag Limit:</u>	1 bird daily (3 in possession)

STAFF RECOMMENDATIONS

<u>Season Dates:</u>	December 19 – December 31 (13 days)
	January 15 – January 31 (17 days)
<u>Bag Limit:</u>	1 bird daily (3 in possession)

TUNDRA SWAN

FEDERAL FRAMEWORK

Season Length: 90 hunting days

Outside Dates: October 1, 2026 - January 31, 2027

Virginia may issue up to 475 permits and must obtain harvest and hunter participation data. Each permittee is authorized to take one (1) tundra swan per season.

Bag Limit: One per permittee per season

STAFF RECOMMENDATIONS

Season Dates: November 15 - January 31

Bag Limit: One per permittee per season

Hunt Area: All counties and portions of counties east of U.S. Route I- 95 and south of the Prince William/Stafford county line in Chopawamsic Creek at Quantico Marine Corps Base.

NOTE: VDWR will issue no more than 475 swan-hunting permits to holders of a valid Virginia hunting license. Only hunters with a valid 2026-2027 tundra swan-hunting permit issued by VDWR shall be authorized to hunt tundra swans. Each permittee will be authorized to take one tundra swan during the season. Swan hunting permits are non-transferable and are valid for use only by the person to whom issued. Permits must be in the immediate possession of the permittee while swan hunting. Immediately at the time and place of kill, successful hunters must permanently record the month and day of kill on their permit and attach it to their swan. The VDWR is required to obtain hunter participation and harvest information to offer this Tundra Swan hunting season. **Hunters are required to complete the tundra swan hunt questionnaire (survey) and submit their results to the Department by February 15, 2027.** Those who fail to submit their results are ineligible for future drawings.

FALCONRY

FEDERAL FRAMEWORK

<u>Season Length:</u>	No more than 107 on any species (Gun and Falconry combined)
<u>Outside Dates:</u>	September 1 - March 10
<u>Bag Limit:</u>	3 daily (9 in possession)
<u>Hawking Hours:</u>	½ hour before sunrise until sunset.

STAFF RECOMMENDATIONS

<u>Dove:</u>	September 5 – October 23 November 21 – November 29 December 19 – January 31
---------------------	---

<u>Rail, Gallinule, Moorhen:</u>	September 5 – December 20
---	---------------------------

<u>Woodcock:</u>	October 17 – January 31
-------------------------	-------------------------

<u>Snipe:</u>	October 1 – December 2 December 19 – January 31
----------------------	--

<u>Canada Goose:</u>	September 1 - September 25 November 18 – November 29 December 19 - February 21
-----------------------------	--

<u>September Teal:</u>	September 16 - September 30
-------------------------------	-----------------------------

<u>Ducks, Mergansers, Coot:</u>	October 10 - 13 November 18 – February 7
--	---

<u>Brant and Snow Goose:</u>	October 17 – January 31
-------------------------------------	-------------------------

NOTE: Recommended dates based on adoption of preceding gun season proposals; if amended, staff requests permission to calculate permissible dates for each species within the allowable federal framework.

Virginia's Smallmouth Bass Management Plan

FINAL DRAFT



John Copeland, Jason Hallacher, Johnathan Harris, Hunter Hatcher, Justin Heflin, Mike Isel, Dan Michaelson, John Odenkirk, George Palmer, Steve Reeser, Scott Smith, Jeff Williams, and Tyler Young

VDWR Warmwater Streams Committee

2024



Background info

Introduction

Smallmouth bass *Micropterus dolomieu* are an incredibly important sportfish throughout Virginia. According to an angler survey conducted in 2020, smallmouth bass are the second most popular target species among anglers in the Commonwealth trailing only largemouth bass (DWR Unpublished).

Smallmouth bass are native to the Tennessee and Big Sandy River drainages in the southwest portion of the state. Targeted introductions in warmwater rivers and lakes throughout other portions of the state have created naturalized populations. Records indicate that smallmouth bass were stocked throughout most Virginia waters during the 19th century around the time of the American Civil War.

Historically Virginia has supported a number of high-quality smallmouth bass fisheries, with some fisheries receiving frequent regional and even national recognition. Riverine smallmouth bass populations can experience high variability as a result of a number of biotic and abiotic factors. This variability affects population parameters and angler success.

Fisheries management staff within the Virginia Department of Wildlife Resources (DWR) developed the following management plan in an effort to facilitate effective management of smallmouth bass in Virginia. This plan incorporates our existing knowledge base and management practices while also establishing a framework for future research projects and management actions that best address agency goals.

Biology

Smallmouth bass exhibit a preference for clear creeks, streams, and rivers with rocky substrate and regular interchanges of riffles, runs, and pools (Leonard et al. 1986). Smallmouth are prevalent in reservoirs with tributaries which have similar characteristics. In general, smallmouth do not persist in soft bottomed ponds and reservoirs. These characteristics lead to decreased prevalence of smallmouth bass as you move east from the Blue Ridge Mountains and into the piedmont and coastal plains of Virginia.

Smallmouth bass are top predators in most systems where they occur and feed on a variety of prey items. Juvenile smallmouth feed primarily on invertebrates but graduate to crayfish, fish, and larger insects as they grow (Woolcott et al. 1974; Coble 1975; Carlander 1977; Miner 1978; Pavol and Davis 1982; Probst et al. 1984). Smallmouth are opportunistic predators and will feed on most anything they can swallow.

Smallmouth bass spawn in the mid to late spring at water temperatures of 16-22°C, typically between late April and early June throughout most of the state (Surber 1970). Similar to other black bass species, males exhibit parental care of nests, eggs, and fry up to several days post-hatch (Pflieger 1966). Smallmouth bass have routinely been known to koppelhybridize with other black bass species, specifically spotted bass *Micropterus punctulatus* and Alabama bass *Micropterus henshalli* (Koppelman 1994; Pierce and Van Den Avyle 1997).

Smallmouth are widely distributed throughout North America with significant expansion beyond their native range. However, local extirpations, commonly attributed to changes in hydrology and habitat, have been observed (Brewer and Orth 2015).

Monitoring

The importance and value of smallmouth bass fisheries to the anglers of Virginia paired with a high degree of annual variability necessitate routine monitoring by DWR fisheries staff. Monitoring serves to assess population trends and vital rates, gauge angler use and harvest, and identify key research needs.

All major riverine smallmouth bass fisheries in the state are assessed annually in the spring or fall (dependent on system specific flow dynamics) using boat or raft electrofishing. During these surveys all smallmouth bass are collected, measured to the nearest millimeter and released. In some cases, a subsample of fish are retained for use in age and growth analysis to assess growth and mortality rates. Targeted sampling for juvenile smallmouth using raft or backpack electrofishing occurs in the summer on select fisheries to assess year class strength. Depletion samples are also conducted on key riverine systems at regular intervals. Depletion samples allow for a better approximation of the density of smallmouth bass in specific river reaches (fish per mile). Smallmouth bass populations in reservoirs are more difficult to effectively quantify. Reservoirs are monitored in the spring using boat electrofishing methods similar to those utilized for riverine populations.

Angler surveys are also conducted at routine intervals on key smallmouth fisheries. These surveys aim to gauge angler use, harvest, and satisfaction pertaining to specific resources. In riverine fisheries angler surveys are often conducted during the same year as depletion samples to allow for comparisons of results, estimation of exploitation rates, and a more in depth look at a particular resource.

Regulations

The regulation of angler harvest provides fisheries managers with one of their most valuable tools in managing fish populations. In black bass fisheries, catch and release practices have largely supplanted harvest. However, exploitation rates have been found to be high for larger fish relative to abundance. High size specific exploitation combined with natural mortality rates, particularly in riverine smallmouth populations, necessitate the use of restrictive harvest regulations to meet certain management objectives. Nearly every major smallmouth bass fishery in Virginia is managed with harvest regulations that are more prohibitive than the statewide black bass regulation which consists of no minimum length limit and a five fish daily limit (Table 1).

Production & Stocking

Supplemental stocking serves as a valuable tool for managing fish populations. Stockings can help to establish new fish populations, restore extirpated fish populations, maintain genetic integrity, or improve the overall quality of a fishery. Virginia DWR readily utilizes supplemental stocking as a tool to manage key sportfish populations. However, smallmouth bass are not frequently cultured within the DWR hatchery system.

In Virginia supplemental stocking of smallmouth bass was attempted on a trial basis from 2005-2008. Over the 4 years smallmouth bass stocking was attempted in Virginia annual stocking requests totaled approximately 20,000-30,000 fingerlings. On average hatchery production could only meet around 70% of these requests. A formal evaluation found year class contribution from stocked fish to be low (0-15%) with some limited success (44%) from the 2005 stocking in the Staunton River (DWR unpublished). Smallmouth bass stockings ceased due

to minimal hatchery yields and poor returns in year class contribution of stocked fish. Fish kills as a result of chemical spills, population declines, and the introduction of new congeners to specific systems all necessitate further investigation of smallmouth bass culture.

In recent years improved success in smallmouth bass production has been documented (Sparrow and Barkoh 2002). Although smallmouth have long been considered a difficult species to culture (Clark 1905), recent advancements in aquaculture technology and facility improvements may lead to increased yields in Virginia's smallmouth bass hatchery production. Though poorly documented, recent studies also indicate limited success in smallmouth bass stocking program efficacy (Bettinger 2020). A great deal remains to be learned about smallmouth bass culture and stocking and its place as a potential management tool in Virginia.

Previous Studies in Virginia

As a result of their value and popularity amongst anglers, smallmouth bass have been studied extensively throughout their range. Smallmouth in Virginia are no different with a number of studies dedicated toward the species.

Numerous studies conducted within Virginia have yielded key findings with major implications for smallmouth bass management in the state. Odenkirk and Smith (2005) generated estimates for densities of smallmouth bass at specific life stages in Virginia rivers, providing context for management targets and objectives. Smith et al. (2005) identified the importance of environmental factors like flow and their impact on year class strength, providing some insight on recruitment variability. Humston et al. (2010) quantified movements within river systems at specific life stages, providing insight on the relationship and exchange between mainstem and tributary smallmouth bass populations. Blazer et al. (2010) and Walsh et al. (2018) assessed the root cause of acute fish health issues in major river drainages and identified future research needs to address continued issues. Hallerman et al. (2015) evaluated genetic variations amongst native and naturalized Virginia smallmouth bass populations to better understand management units and inform potential stockings. These studies represent a select few of many conducted on smallmouth bass in Virginia (Appendix A). Despite extensive research, much remains unknown about the smallmouth in Virginia.

Marketing

A significant effort is put forth by DWR to recruit, retain, and reactivate anglers (R3). Virginia's smallmouth bass fisheries provide an excellent opportunity to implement the agency's R3 plan and support the agency's mission, "to connect people to the outdoors through fishing."

Due to the smallmouth bass' aggressive nature, and relative ease of capture, they serve as a valuable option for new anglers to have a successful day of fishing. Messaging and advertising designed to recruit or retain anglers should emphasize how simple and fun it is to catch smallmouth bass, how relaxing a day on the water can be, and the opportunities fishing provides to experience the outdoors with others (Responsive Management and Southwick and Associates 2012). Targeting smallmouth bass can be done with little knowledge of the resource and with inexpensive fishing gear, which are both attractive drivers for new anglers. As an example, wade fishing during the summer months provides a unique connection to the environment and serves as a foundation for a strong aquatic conservation ethic. Furthermore, Virginia's rivers are already

heavily utilized by paddle craft, non-anglers who readily paddle rivers provide an excellent opportunity for angler recruitment.

While DWR focuses substantial effort toward recruiting new anglers through events like free fishing weekends and kids fishing days, there are few programs devoted to retaining current anglers. DWR boasts a considerable number of boat ramps and paddle craft launches on rivers and streams which make river access easy. Float trips targeting smallmouth bass should be leveraged to retain novice anglers by offering an adventurous next step within their journey in becoming an experienced angler. Not only do float trips offer a new challenge, but they also combine other popular outdoors activities like camping, paddling, and wildlife watching. The top three reasons people fish are to: spend time with family and friends, relax, and for sport or recreation. For new anglers, the opportunity for relaxation is a strong driver while avid anglers tend to be in it for the excitement (Aquatic Resource Education Association 2016). Smallmouth bass angling perfectly encapsulates these interests and supports the agency's current outreach effort, "The Outdoors are Better Together."

Goals and Objectives

Goal 1: Management and Monitoring - Maintain and enhance recreational fishing opportunities for smallmouth bass in Virginia.

Objective 1: Identify smallmouth bass waters across the Commonwealth and utilize best available information to manage for quality angling experiences, within the biological limitations of specific resources, in a prompt and responsive manner.

- *Strategy 1:* Evaluate and classify smallmouth bass waters across Virginia. All established or potential smallmouth bass fisheries, including rivers, streams, and lakes, should be sampled to collect smallmouth bass population data. Data collected should be used to examine dynamic rate functions (recruitment, mortality, immigration, and emigration) and classify the water into one of three categories (Table 1).
 - Tier 1 Waters – Warmwater streams resources that have exceptional smallmouth bass populations and/or existing popular fisheries with adequate public access. Reservoir/small impoundment resources with exceptional smallmouth bass populations that serve as the primary component of the systems black bass fishery. These fisheries are sometimes referred to as 'Blue Ribbon Fisheries'. All management techniques and resources should be implemented to help maintain, and potentially improve, fisheries in these waters. Native smallmouth bass populations in this category should incorporate management techniques that enhance the fishery while conserving genetic integrity.
 - Tier 2 Waters – Warmwater streams resources that have exceptional smallmouth bass populations or ample public access, but not both. Reservoir/small impoundment resources that have high numbers of smallmouth bass but black bass fisheries are dominated by other species. All management techniques and resources should be implemented to help maintain, and potentially improve, fisheries in these waters. Native smallmouth bass populations in this category should incorporate

management techniques that enhance the fishery while conserving genetic integrity.

- Tier 3 Waters – Warmwater streams resources with smallmouth bass populations that have a limited potential fishery due to lack of access, habitat constraints, or other exclusionary variables. Reservoir/small impoundment resources with limited smallmouth bass numbers and black bass fisheries dominated by other species. No management techniques would likely be needed for these waters. Conservation efforts will be warranted in these waters to identify and maintain native smallmouth bass populations.
- *Strategy 2: Set management priorities for individual waters based on water classification goals and individual fishery needs.*
 - Tier 1: Waters should be managed to maintain overall goals for smallmouth bass populations of $RSD280 \geq 25$ and $RSD380 \geq 3$ when samples are large enough to examine stock density estimates (at least 30 smallmouth bass ≥ 8 inches needed for evaluation). These fisheries should be managed for overall catch rates within one standard deviation of the long-term average. Extensive public access should be obtained for these waters (desired minimum of two access sites every 10 river miles for streams and rivers). Additional management goals other than these minimums (i.e. trophy waters) can be added on a waterbody basis. Any additional goals that utilize statewide resources (i.e. stocking) should be prioritized through the Warmwater Streams Committee.
 - Tier 2 Waters should be managed to maintain self-sustaining smallmouth bass populations with overall electrofishing catch rates within one standard deviation of the long-term average and multiple public access locations (desired minimum of two access sites every 15 river miles for streams and rivers). These fisheries should have balanced size structures but can lack trophy potential.
 - Tier 3 Waters should be managed to maintain self-sustaining smallmouth bass populations and have at least one public access.
- *Strategy 3: Routinely monitor smallmouth bass waters, which are subject to high variability, to evaluate population dynamics, fish health, and overall effectiveness in meeting management goals.*
 - Tier 1 Waters should be monitored annually with spring or fall electrofishing. Data collections should include information to evaluate population size structure and recruitment. Data for more in-depth growth and mortality should be collected on a routine basis as supported by the population size and/or management need (i.e. once every 5 years). Fish health monitoring should be performed every 1-3 years in the late-Spring (May-June). Additionally, Tier 1 warmwater streams should be rotationally sampled with depletion electrofishing surveys to collect more extensive data for management purposes.
 - Tier 2 Waters should be monitored every 2-3 years depending on size. Data collections should include information to evaluate population size

structure. Data for more in-depth growth, mortality, and recruitment should be collected if needed to address specific fishery issues. Depletion electrofishing surveys may be warranted occasionally for special projects where more in-depth data is needed for management purposes. Fish health monitoring should be performed every 3-5 years in the late-Spring (May-June).

- Tier 3 Waters do not need regular monitoring but should be evaluated occasionally (i.e. once every 10 years) to evaluate potential fishery or if additional public access is acquired. Fish health monitoring should be performed as needed.
- *Strategy 4:* Quantify recreational use, economic value of fisheries, and exploitation within smallmouth bass fisheries.
 - Tier 1 Waters should have comprehensive creel surveys (collecting data on use, economics, catch, harvest, etc.) conducted every 5-8 years depending on staffing and funding availability. More extensive angler utilizations and exploitation studies should be used as warranted due to high pressure. Creel surveys should be coordinated to take place in the same time frame as depletion surveys if possible.
 - Tier 2 Waters should have creel surveys conducted once every 10-12 years depending on staffing and funding availability.
 - Tier 3 Waters should only need creel surveys if there is potential for reclassification.
- *Strategy 5:* Use regulatory methods to achieve management goals at certain waters. Methods include minimum size limits, slot limits, creel limits, and fishery closures (Table 1).
 - Special regulations should be routinely evaluated to determine effectiveness.

Objective 2: Actively enhance and protect critical smallmouth bass habitat through agency initiatives, management partnerships, and regulatory options.

- *Strategy 1:* Foster partnerships with other State Agencies, River keepers, NGOs, and citizens groups that dedicate funding and resources to stream and riparian restoration projects.
- *Strategy 2:* Environmental reviews in smallmouth bass waters should include special reviews examining effects on smallmouth bass fisheries, especially projects that involve tier 1 and 2 waters. These reviews should include suggestions/restrictions to reduce sedimentation and altered flows, and to stop work during sensitive times of the year (i.e. spawning).
- *Strategy 3:* Work to dedicate annual funding for stream restoration projects in waters/watersheds that contain valuable smallmouth bass fisheries.
- *Strategy 4:* Work to establish more temperature monitoring stations in sensitive smallmouth bass watersheds. This may be accomplished through agency purchased equipment and monitoring or with citizen group and NGO partnerships.

- *Strategy 5:* Create media and published content on the importance of fish habitat, how to enhance habitat, and habitat projects across the state that relate to smallmouth bass and other riverine fishes.

Objective 3: Protect the genetic integrity of native smallmouth bass populations and maintain the coarse genetic integrity of naturalized populations within the bounds of management strategies in Virginia.

- *Strategy 1:* Conduct routine genetic surveillance of smallmouth bass populations to establish genetic baselines and monitor hybridization with congeners. Fin clip samples of at least 30 fish every 5-8 years or if the presence of a new black bass species or a hybrid is detected. Other waters should have genetic surveillance if a new black bass species or hybrid is detected or if the water body has a high potential to affect a priority water. In that case, the waterbody should have similar surveillance as the priority water.
- *Strategy 2:* The agency rapid response protocol for invasive species should be implemented when a new black bass species or its hybrid is collected in an agency managed smallmouth bass water.
- *Strategy 3:* Use authentic brood stock for supplemental stocking. Genetic testing of brood stock should be conducted if not verified by the producer.
- *Strategy 4:* The agency should support a technician position stationed at genetics lab to run broodstock genetic marker analysis for quick turnaround times, and for Alabama bass/hybrid black bass genetic analysis.
- *Strategy 5:* The agency should continue and expand efforts through social media, publications, and signage about genetic integrity of naturalized populations and educate about potential negative outcomes of illegal stocking.

Objective 4: Develop methods/protocol to prioritize smallmouth bass waters for potential supplemental stocking on a routine basis consistent with hatchery space/production.

- *Strategy 1:* The Warmwater Streams Committee will annually prioritize smallmouth bass stocking needs across all resources (warmwater streams and impoundments), based on need and/or the likelihood of achieving desired outcomes. All stocking efforts are dependent upon the availability of reliable and genetically pure brood source as well as effective culture methods.
 - *Notes for committee:* The South River has first priority for all smallmouth bass produced out of Front Royal Fish Hatchery due to the renovation funded from the DuPont settlement funds.

Objective 5: Improve the accessibility of smallmouth bass fisheries throughout the Commonwealth.

- *Strategy 1:* Maintain and enhance existing access sites on smallmouth bass fisheries.
- *Strategy 2:* Identify the desired density of public access points needed for Tier 1-3 waters (e.g., miles/access point or acres/access point).

- *Strategy 3:* Catalog existing public access on smallmouth bass waters and identify existing or potential fisheries in need of additional access. Develop a prioritized list (updated every 3 years) of access needs for smallmouth bass fisheries.
- *Strategy 4:* Utilize partnerships with localities and private groups/partners to create new access sites on smallmouth bass fisheries based on prioritized needs.
- *Strategy 5:* Dedicate funding to create new agency operated access sites on sections of waters with the highest need. River access needs should be incorporated and prioritized with larger agency infrastructure goals.

Goal 2: Research - Develop a more complete understanding of causative mechanisms impacting smallmouth bass population dynamics in Virginia.

Objective 1: Evaluate statewide population trend data as compared to potential causative factors (e.g. environmental and anthropogenic) to identify potential trends every 3 years, at minimum.

- *Strategy 1:* Continue annual monitoring efforts to retain the utility of long term data sets and capture system specific variation.
- *Strategy 2:* Store all warmwater streams data in a centralized data storage system.
- *Strategy 3:* Develop best practices and discuss data standardization at the annual Warmwater Streams committee meeting.
- *Strategy 4:* Investigate development of correction factors for sampling variability (dipper number, all species vs sportfish, etc.) and reassess on a 3-5 year basis.
- *Strategy 5:* Collect and store all environmental data from outside sources every 3 years, or as needed.
- *Strategy 6:* Designate a working group within the Warmwater Streams committee to conduct data mining and analysis every 3 years.

Objective 2: Work within the appropriate DWR technical committee (warmwater streams, reservoirs, or small impoundments) to identify and prioritize research questions of integral importance to smallmouth bass management in Virginia on an annual basis and meet research needs in a timely manner.

- *Strategy 1:* Annually solicit research needs from committee membership and prioritize within the appropriate DWR technical committee (warmwater streams, reservoirs, or small impoundments).
- *Strategy 2:* Advocate for in-house and external smallmouth bass research needs and opportunities at all Aquatic Resource Science Team (ARST) and warmwater streams meetings.
- *Strategy 3:* Participate in and facilitate worthwhile opportunities for research collaboration with other agencies and institutions as they occur to improve sample size and statistical power.
- *Strategy 4:* Utilize the Warmwater Streams Science Team to distribute information and foster discussion of relevant research in a timely manner.

Objective 3: Annually communicate with other state management agencies and research institutions on ongoing smallmouth bass research.

- *Strategy 1:* Form an ad-hoc group of regional state agencies (VA, WV, MD, NC, TN, PA, etc.) to meet annually and discuss smallmouth bass research and trends.
- *Strategy 2:* Maintain active participation in the Southern Division American Fisheries Society Warmwater Streams Technical Committee.
- *Strategy 3:* Prioritize and advocate for annual attendance of relevant professional conferences and workshops by committee members.

Goal 3: Culture - Investigate the feasibility of smallmouth bass production in-house to facilitate the potential use of supplemental stocking or population restoration as a management tool.

Objective 1: Research and utilize best practices to develop and refine agency smallmouth bass production methods while limiting impacts to the production of other species within Division-identified production priorities.

- *Strategy 1:* Identify the desired number of fingerlings for stocking, size of fingerlings, and timing of stockings. Select a minimum and maximum size range.
- *Strategy 2:* Establish plans for brood fish management, fry production, and fingerling production in coordination with the hatchery section.
- *Strategy 3:* Work with hatchery staff to address the infrastructure and logistics of rearing and stocking smallmouth bass.
- *Strategy 4:* Connect with neighboring natural resource agencies to collaborate and share ideas and resources.

Objective 2: Routinely assess in-house production capabilities relative to stocking requests and assess feasibility of external sources.

- *Strategy 1:* Develop a 3-year plan (updated annually) for smallmouth bass stocking priorities (number, location, size, timing), and communicate this with the hatchery section.
- *Strategy 2:* Coordinate with the hatchery section to identify existing smallmouth bass production capabilities and possible bottlenecks to enhanced production. Compare the existing production capacity with the desired production capacity.
- *Strategy 3:* Identify and assess the feasibility of external sources of smallmouth bass for supplemental stocking with careful consideration of genetics and fish health implications.

Objective 3: Obtain meaningful numbers of smallmouth bass through in-house production or external sources annually for use in supplemental stocking.

- *Strategy 1:* Identify resources capable of supplying broodstock for production purposes.
- *Strategy 2:* Leverage newly renovated Front Royal FCS and additional / other resources to produce desired numbers of smallmouth bass within Division production priorities.
- *Strategy 3:* Investigate the feasibility of raising smallmouth intensively.

- *Strategy 4:* Identify potential external sources for smallmouth bass production and investigate options for utilizing these sources to supplement in-house production.

Objective 4: Evaluate the effectiveness of all smallmouth bass stockings in meeting management objectives and utilize findings to inform future stockings.

- *Strategy 1:* Establish protocols for assessing the effectiveness of supplemental stockings in meeting previously established system specific management objectives.
- *Strategy 2:* Analyze and report findings within the warmwater streams technical committee to inform the future use of supplemental stocking as a management tool.

Goal 4: Outreach - Facilitate the effective flow of information between fisheries management staff and stakeholder groups and increase the use of the smallmouth bass resource in Virginia.

Objective 1: Utilize smallmouth bass fisheries to recruit new anglers based on ease of capture, limited specialized equipment, and angling opportunities near urban centers (Lynchburg and Richmond).

- *Strategy 1:* Promote smallmouth bass to new anglers during and after Free Fishing Day events.
- *Strategy 2:* Integrate smallmouth bass information in beginner Angler Education workshops and clinics including future fishing events and online education.
- *Strategy 3:* Connect bass angler clubs to DWR recruitment events to encourage mentorship and increase resources for new anglers.
- *Strategy 4:* Identify paddler groups and direct outreach efforts toward the incorporation of smallmouth bass fishing into their excursions.

Objective 2: Utilize smallmouth bass fisheries to increase participation and retention of current anglers through the promotion of quality fishing opportunities

- *Strategy 1:* Promote smallmouth bass fishing opportunities to a targeted group of anglers (e.g. trout anglers) specifically during warm water months.
- *Strategy 2:* Coordinate between Outreach and Fisheries Divisions to improve available information related to the biological and recreational components of smallmouth bass fishing.

Objective 3: Utilize smallmouth bass fisheries to reactivate lapsed angler groups.

- *Strategy 1:* Promote smallmouth bass fishing opportunities to a targeted group of lapsed anglers.

Objective 4: Regularly prepare and release information/media on the status and outlook of smallmouth bass fishing in Virginia to manage angler expectations.

- *Strategy 1:* Coordinate with DWR's outreach division to provide up to date resource specific information to manage angler expectations.
 - Promote access using the resource pages on the agency website, update resource pages on a regular basis.

- *Strategy 2:* Continually update smallmouth bass species page on agency website with current information reflective of new research and findings to promote transparency and public trust.
- *Strategy 3:* Utilize all available marketing options (website, social media, etc.) to provide timely and relevant information to the angling public regarding smallmouth bass population status/trends in specific water bodies, angling techniques, access facilities, etc.

Tables and Figures

Table 1. List of smallmouth bass fisheries in Virginia with size, management classification, stocking request/rate, and current regulation.

Resource	Size (acres/river miles)	Management Classification	Stocking Request	Regulation
Staunton River	80 mi	Tier 1	N/A	1 > 20"
Upper James River	90 mi	Tier 1		14-22" Protected Slot, 1 > 22"
Middle James River	130 mi	Tier 1		14-22" Protected Slot, 1 > 22"
Fall-line James River	9 mi	Tier 2		14-22" Protected Slot, 1 > 22"
Jackson River	96 mi	Tier 2	N/A	None
Maury River	43 mi	Tier 1	N/A	None
Clinch River	135 mi	Tier 2	N/A	1 > 20"
Powell River	80 mi	Tier 2	N/A	None
Levisa Fork River	30 mi	Tier 2	N/A	1 > 20"
North Fork Holston River	100 mi	Tier 2	N/A	1 > 20"
Middle Fork Holston River	56 mi	Tier 2	N/A	None
Upper New River	80	Tier 1	N/A	14-22" Protected Slot, 1 > 22"
Lower New River	63	Tier 1	N/A	14-22" Protected Slot, 1 > 22"
North Fork Shenandoah River	116 mi	Tier 2		No LMB or SMB 11-14"
South Fork Shenandoah River	97 mi	Tier 1		No LMB or SMB 11-14"
Shenandoah River	35 mi	Tier 2		No LMB or SMB 11-14"
Rappahannock River	195 mi	Tier 1	N/A	None
Rapidan River	88 mi	Tier 1	N/A	None
Nottoway River	155 mi	Tier 3	N/A	None
Appomattox River	157 mi	Tier 3	N/A	None

Hardware River	23 mi	Tier 3	N/A	None
Dan River	70 mi	Tier 3	N/A	Only 2 of 5 <14"
Tye River	35 mi	Tier 2	N/A	None
Rockfish River	29 mi	Tier 3	N/A	None
Rivanna River	42 mi	Tier 2	N/A	None
Philpott Reservoir	2,880 ac	Tier 2	N/A	None
Flanagan Reservoir	1,143 ac	Tier 2	N/A	15" minimum
South Holston Lake	7,580 ac	Tier 1	N/A	15" minimum
Smith Mountain Lake	20,600 ac	Tier 2	N/A	Only 2 of 5 <14"
Claytor Lake	4,363 ac	Tier 2	N/A	14" minimum
Lake Moomaw	2,530 ac	Tier 1	N/A	12" minimum
Laurel Bed Lake	330 ac	Tier 1	N/A	Catch and Release

Literature Cited

- Aquatic Resource Education Association. 2016. Highlights of Angler Recruitment, Retention and Reactivation (R3) Literature. Unpublished.
- Bettinger, J. 2020. Evaluation of Two Sizes of Fingerling Smallmouth Bass Stocked into a South Carolina River. *Journal of the Southeastern Association of Fish and Wildlife Agencies* 7: 41–48.
- Blazer, V. S., L. R. Iwanowicz, D. D. Iwanowicz, D. R. Smith, J. A. young, J. D. Hedrich, S. W. Fisher and S. J. Reeser. 2007. Intersex (Testicular Oocytes) in Smallmouth Bass *Micropterus dolomieu* From the Potomac River and Nearby Drainages. *Journal of Aquatic Animal Health*, 19(4): 242-253.
- Blazer V. S., L. R. Iwanowicz, C. E. Starliper, D. D. Iwanowicz, P. Barbash, J. D. Hedrick, S. J. Reeser, J. E. Mullican, S. D. Zaugg, M. R. Burkhardt, and J. Kelble. 2010. Mortality of Centrarchid Fishes in the Potomac Drainage: Survey Results and Overview of Potential Contributing Factors. *Journal of Aquatic Animal Health*, 22:190-218.
- Brewer, S. K., and D. J. Orth. 2015. Smallmouth Bass *Micropterus dolomieu* Lacepede, 1802. *American Fisheries Society Symposium* 82:9-26.
- Carlander, K. D. 1977. *Handbook of Freshwater Fishery Biology*, volume 2. Iowa State University, Ames, Iowa
- Clark, F. N. 1905. Notes on Small Mouth Bass Culture at the Northville, Michigan Station. *Transactions of the American Fisheries Society* 34(1): 174-189.
- Coble, D. W. 1975. Smallmouth Bass. Pages 21-33 in R. H. Stroud and H. Clepper, editors. *Black Bass Biology and Management*. Sport Fishing Institute, Washington, D. C.
- Hallerman, E. M., N. Johnson, and D. Dutton. 2005. Genetic Variation Among Virginia Smallmouth Bass Populations: Final Report. Department of Fisheries and Wildlife Sciences, Virginia Tech. Blacksburg, Virginia.
- Humston, R., B. M. Priest, and W. C. Hamilton. 2010. Dispersal between Tributary and Main-Stem Rivers by Juvenile Smallmouth Bass Evaluated Using Otolith Microchemistry. *Transactions of the American Fisheries Society*, 139: 171-184.
- Koppelman, J. B. 1994. Hybridization between Smallmouth Bass, *Micropterus dolomieu*, and Spotted Bass, *M. punctulatus*, in the Missouri River System, Missouri. *Copeia*, 1994(1): 204-210.
- Leonard, P. M, D. J. Orth, and C. J. Goudreau. 1986. Development of a method for recommending instream flows for fishes in the Upper James River, Virginia. Virginia Polytechnic Institute and State University, Water Resources Research Center Bulletin 54.

- Miner, J. B. 1978. The feeding habits of Smallmouth Bass and Largemouth Bass in the Shenandoah River, Virginia. Master's Thesis. University of Virginia, Charlottesville, Virginia.
- Odenkirk, J. S., and S. M. Smith. 2005. Single-versus Multiple-Pass Boat Electrofishing for Assessing Smallmouth Bass Populations in Virginia Rivers. *North American Journal of Fisheries Management*. 25:717-724.
- Pavol, K. W., and R. M. Davis. 1982. Life History and Management of Smallmouth Bass in Susquehanna River below Conowingo Dam. Maryland Department of Natural Resources, Wildlife Administration, Project F-29-R, Study II, Annapolis, Maryland.
- Pflieger, William L. 1966. Reproduction of the Smallmouth Bass (*Micropterus Dolomieu*) in a Small Ozark Stream. *The American Midland Naturalist*, vol. 76, no. 2, 1966, pp. 410–18.
- Pierce, P. C., and M. J. Van Den Avyle. 1997. Hybridization between Introduced Spotted Bass and Smallmouth Bass in Reservoirs. *Transactions of the American Fisheries Society*, 126(6): 939-947.
- Probst, W. E., C. F. Rabeui, W. G. Covington, and R. E. Marteney. 1984. Resource use of stream-dwelling Rock Bass and Smallmouth Bass. *Transactions of the American Fisheries Society* 113:283-294.
- Responsive Management and Southwick Associates. "Why Do Anglers Sit on the Fence About Going Fishing? A Study of Why They Do and Don't Fish and What Will Get Them On the Water". Produced for the American Sportfishing Association under a U.S. Fish and Wildlife Service Sport Fish Restoration grant (VA M-24-R) awarded by the Association of Fish and Wildlife Agencies. 2012.
- Sparrow, R., & Barkoh, A. 2002. Intensive Production of Smallmouth Bass Fry. *North American Journal of Aquaculture*, 64(3), 205–209.
- Smith, S. M., J. S. Odenkirk, and S. J. Reeser. 2005. Smallmouth Bass Recruitment Variability and Its Relation to Stream Discharge in three Virginia Rivers. *North American Journal of Fisheries Management*. 25:1112-1121.
- Walsh, H.L., V.S. Blazer, G.D. Smith, M. Lookenbill, D.A. Alvarez, and K.L. Smalling. 2018. Risk Factors Associated with Mortality of Age-0 Smallmouth Bass in the Susquehanna River Basin, Pennsylvania. *Journal of Aquatic Animal Health*. 30: 65-80.
- Woolcott, W. S., W. L. Kirk, E. G. Maurakis, and J. W. White. 1974. The effects of thermal loading by the Bremo Power Station on a Piedmont section of James River, July 1972-June 1974. Final Report, 2 volumes. Virginia Institute for Scientific Research, Richmond, Virginia.

Appendices

Appendix A:

Smallmouth Bass Research Conducted in Virginia

- Austen, D. J. and D. J. Orth. 1984. Angler catches from New River Virginia and West Virginia, in relation to minimum length limit regulations. *Proceedings of the Annual Conference Southeastern Association of Fish and Wildlife Agencies* 38: 520-531.
- Austen, D. J. and D. J. Orth. 1988. Evaluation of a 305-mm length limit on smallmouth bass in the New River, Virginia and West Virginia. *North American Journal of Fisheries Management* 8: 231-239.
- Blazer, V. S., L. R. Iwanowicz, D. D. Iwanowicz, D. R. Smith, J. A. young, J. D. Hedrich, S. W. Fisher and S. J. Reeser. 2007. Intersex (Testicular Oocytes) in Smallmouth Bass *Micropterus dolomieu* From the Potomac River and Nearby Drainages. *Journal of Aquatic Animal Health*, 19(4): 242-253.
- Blazer V. S., L. R. Iwanowicz, C. E. Starliper, D. D. Iwanowicz, P. Barbash, J. D. Hedrick, S. J. Reeser, J. E. Mullican, S. D. Zaugg, M. R. Burkhardt, and J. Kelble. 2010. Mortality of Centrarchid Fishes in the Potomac Drainage: Survey Results and Overview of Potential Contributing Factors. *Journal of Aquatic Animal Health*, 22:190-218.
- Copeland, J. R., D. J. Orth, and G. C. Palmer. 2006. Smallmouth Bass Management in the New River, Virginia: A Case Study of Population Trends with Lessons Learned. *Proceedings of the Annual Conference of the Southeastern Association of Fish and Wildlife Agencies*, 60: 180-187.
- Garren, D. A. 1998. Impact of Localized Harvest on the Population of Smallmouth Bass (*Micropterus dolomieu*) of Lake Moomaw, Virginia. Master's thesis. Virginia Polytechnic Institute and State University, Blacksburg, Virginia.
- Graham, R. J. and D. J. Orth. 1986. Effects of Temperature and Streamflow on Time and Duration of Spawning by Smallmouth Bass. *Transactions of the American Fisheries Society*, 115: 693-702.
- Groshens, T. P. and D. J. Orth. 1993. An Assessment of the Transferability of Habitat Suitability Criteria for Smallmouth Bass. *Virginia Water Resources Research Center Bulletin* 180. Virginia Polytechnic Institute and State University, Blacksburg, Virginia.
- Hallerman, E. M., N. Johnson, and D. Dutton. 2015. Implications of Microsatellite Variation upon Management of Virginia Smallmouth Bass Populations. Pages 363-378 *In* M. Tringali, M. Allen, T. Birdsong, and J. Long, editors. *Black Bass Biodiversity: Multidisciplinary Science for Conservation*. American Fisheries Society, Bethesda, Maryland.

- Helfrich, L. A., B. D. Chapman, and J.W. Kauffman. 1987. Profiles of Shenandoah River anglers fishing and three black bass length limit regulations. Proceedings of the Annual Conference of the Southeastern Association of Fish and Wildlife Agencies, 41: 178-186.
- Humston, R., B. M. Priest, and W. C. Hamilton. 2010. Dispersal between Tributary and Main-Stem Rivers by Juvenile Smallmouth Bass Evaluated Using Otolith Microchemistry. Transactions of the American Fisheries Society, 139: 171-184.
- Humston, R., M. Moore, C. Wass, D. Dennis, and S. Doss. 2015. Correlations between body length and otolith size in smallmouth bass *Micropterus dolomieu* Lacepede, 1802 with implications for retrospective growth analyses. Journal of Applied Ichthyology, 2015: 1-5.
- Humston, R., S. S. Doss, C. Wass, C. Hollenbeck, S. R. Thorrold, S. Smith, and C. P. Bataille. 2017. Isotope geochemistry reveals ontogeny of dispersal and exchange between main-river and tributary habitats in smallmouth bass *Micropterus dolomieu*. Journal of Fish Biology, 90: 528-548.
- Humston, R., E. Hallerman, S. Smith, and G. Muckleroy. 2021. Natal and intergenerational dispersal of riverine smallmouth bass (*Micropterus dolomieu*). 2021. Canadian Journal of Fisheries and Aquatic Sciences, 78(11): 1701-1711.
- Kauffman, J. W. 1983. Effect of a smallmouth bass minimum size limit on the Shenandoah River sport fishery. Proceedings of the Annual Conference of the Southeastern Association of Fish and Wildlife Agencies, 36: 459-467.
- Knotek, W. L. and D. J. Orth. 1998. Survival for specific life intervals of smallmouth bass, *Micropterus dolomieu*, during parental care. Environmental Biology of Fishes, 51: 285-296.
- Lukas, J. A. and D. J. Orth. 1995. Factors Affecting Nesting Success of Smallmouth Bass in a Regulated Virginia Stream. Transactions of the American Fisheries Society, 124: 726-735.
- Murphy, G. W., T. J. Newcomb, D.J. Orth and S.J. Reeser. 2005. Food Habits of Selected Fish Species in the Shenandoah River Basin, Virginia. Proceedings of the Fifty-ninth Annual Conference Southeastern Association of Fish and Wildlife Agencies, 59: 325-335.
- Odenkirk, J. S. and S.M. Smith. 2005. Single-versus multiple-pass boat electrofishing for assessing Smallmouth Bass populations in Virginia Rivers. North American Journal of Fisheries Management, 25: 717-724.
- Orth, D. J. and T. J. Newcomb. 2002. Certainties and uncertainties in defining essential habitats in riverine smallmouth bass. Pages 251-264 *In* D. P. Philipp and M. S. Ridgway, editors. Black bass: ecology, conservation, and management. American Fisheries Society, Symposium 31, Bethesda, Maryland.

- Pert, E. J., D. J. Orth, and M. J. Sabo. 2002. Lotic-Dwelling Age-0 Smallmouth Bass as Both Resource Specialists and Generalists: Reconciling Disparate Literature Reports. Pages 185-189 *In* D. P. Philipp and M. S. Ridgway, editors. Black bass: ecology, conservation, and management. American Fisheries Society, Symposium 31, Bethesda, Maryland.
- Reeser, S. J., and G. C. Palmer. 2011. Capture Avoidance of Smallmouth Bass During Multi-Pass Depletion Sampling in Virginia Rivers. Proceedings of the Annual Conference Southeastern Association of Fish and Wildlife Agencies, 64:172-178.
- Roell, M. J. and D. J. Orth. 1993. Trophic Basis of Production of Stream-Dwelling Smallmouth Bass, Rock Bass, and Flathead Catfish in Relation to invertebrate Bait Harvest. Transactions of the American Fisheries Society, 122: 46-62.
- Sabo, M. J., D. J. Orth, and E. J. Pert. 1996. Effect of stream microhabitat characteristics on rate of net energy gain by juvenile smallmouth bass, *Micropterus dolomieu*. Environmental Biology of Fishes, 46: 393-403.
- Sabo, M. J. and D. J. Orth. 1994. Temporal Variation in Microhabitat Use by Age-0 Smallmouth Bass in the North Anna River, Virginia. Transaction of the American Fisheries Society, 140 (5): 733-746.
- Smith, S. M., J. S. Odenkirk, and S. J. Reeser. 2005. Smallmouth bass recruitment variability and its relation to stream discharge in three Virginia streams. North American Journal of Fisheries Management, 25: 1112-1121.
- Smith, P. P. and J. W. Kauffman. 1991. The Effects of a Slot Size Limit Regulation on Smallmouth Bass in the Shenandoah River, Virginia. Pages 112-117 in Proceedings of the First International Smallmouth Bass Symposium. Nashville, Tennessee.
- Surber, E. W. 1969. Effects of a 12-inch size limit on smallmouth bass populations and fishing pressure in the Shenandoah River, Virginia. Proceedings of the Annual Conference of the Southeastern Association of Fish and Wildlife Agencies, 22: 300-311.
- Surber, E. W. 1969. Final Report – Virginia Dingell-Johnson Project F-14-R. Smallmouth Bass Stream Investigations, Job Number 2. Shenandoah River Study. January 1, 1964 – June 30, 1969.